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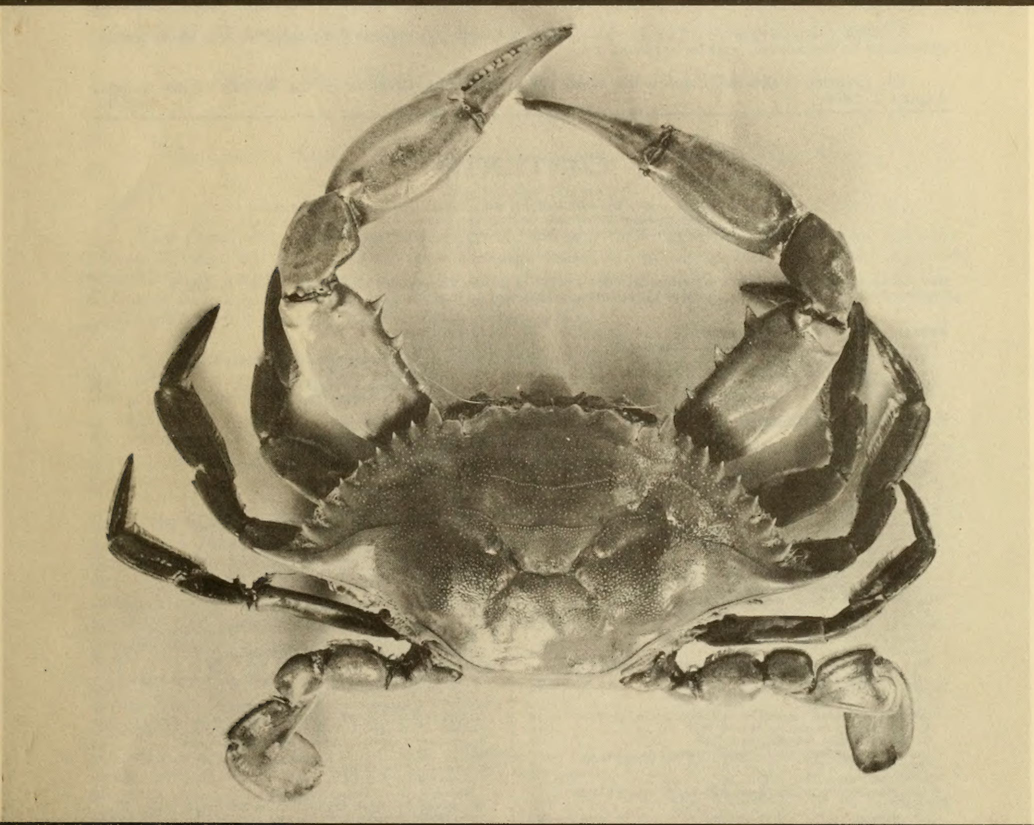
COMMERCIAL FISHERIES REVIEW



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FISH and WILDLIFE SERVICE
United States Department of the Interior
Washington, D.C.

UNITED STATES
DEPARTMENT OF THE INTERIOR
FRED A. SEATON, SECRETARY

FISH AND WILDLIFE SERVICE

COMMERCIAL FISHERIES REVIEW

A review of developments and news of the fishery industries
prepared in the BRANCH OF COMMERCIAL FISHERIES

A. W. Anderson, Editor
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Mailed free to members of the fishery and allied industries. Address correspondence and requests to the: Director, Fish and Wildlife Service, U. S. Department of the Interior, Washington 25, D. C.

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COMMERCIAL FISHERIES REVIEW

July 1957 Washington 25, D.C. Vol.19, No.7

HOW TO COOK FROZEN FISH WITHOUT PRETHAWING

Part II - The Effect of Oven Temperature on Cooking Time for Frozen Halibut Steaks

By Lois C. Elgin,* Kathryn L. Osterhaug,** and Thelma S. Rose*

BACKGROUND

The popularity of prepackaged foods has increased tremendously. The convenience of the meal-size frozen-food package has been an important aid in selling foods that require no prethawing, such as frozen vegetables. The sale of frozen fish fillets and steaks, however, has been retarded somewhat by a lack of specific reliable instructions for cooking fish without prethawing.

Because little experimental work has been conducted on this problem, a study has been undertaken at the Service's Seattle Technological Laboratory. The first objective of the project was to determine a criterion for "doneness" in fish (when cooked) that would be reproducible. Previously, fish had been considered done if it flaked easily when tested with a fork. This criterion was too indefinite for controlled experiments.

The work of Helen Charley (1952), which was used as a reference throughout the project, was based on the assumption that the logical criterion for "doneness" in protein foods was the internal temperature. Accordingly, a series of controlled palatability taste tests evaluating frozen halibut steaks baked to internal temperatures of 130° to 135° F., 145° to 150° F., 155° to 160° F., and 170° to 175° F. indicated that the 155° to 160° F. range was preferred for flavor, texture, and juiciness (Osterhaug and MacFarlane 1955).

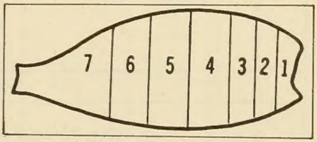

FIG. 1 - SHOWS HOW EACH HALIBUT WAS CUT:

1. 1½-INCH SINGLE STEAKS (300 GMS.)
2. 1-INCH SINGLE STEAKS (300 GMS.)
3. 1-INCH DOUBLE STEAKS (600 GMS.)
4. ½-INCH SINGLE STEAKS (300 GMS.)
5. 1-INCH DOUBLE STEAKS (600 GMS.)
6. 1-INCH SINGLE STEAKS (300 GMS.)
7. 1½-INCH SINGLE STEAKS (300 GMS.)

With a standard internal temperature for baking frozen halibut steaks having been established, the next objective was to find the time required for frozen (27° F.) halibut steaks of different thicknesses to reach an internal temperature of 155° to 160° F. at various oven temperatures. The results are reported in this paper.

EXPERIMENTAL PROCEDURE

Frozen halibut steaks, ½, 1, and 1½ inches in thickness, were used for this study. A steak weighing 300 grams,1/ regardless of thickness, was always used as a matter of convenience. Although a 300-gram ½-inch steak was large and thin, it was possible to cut it from a large fish. A 300-gram 1-inch steak was readily available from any medium size halibut and the 300-gram 1½-inch steak was thick and chunky but still had a steak shape.

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1/ 300 GRAMS EQUALS 10.58 OUNCES OR 0.8 POUND.

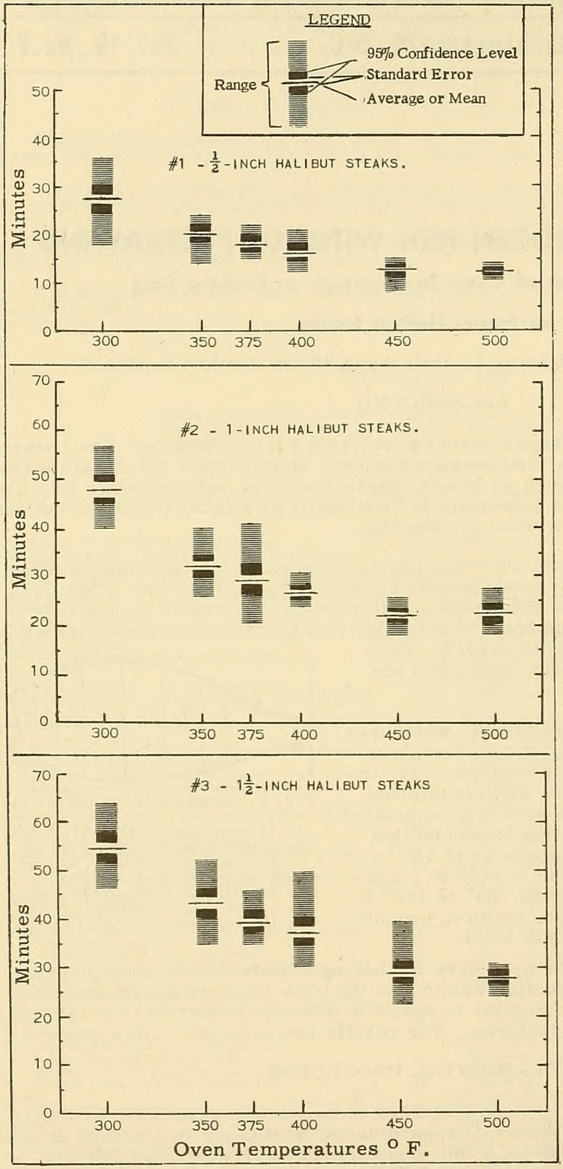

FIG. 2 - RANGES, AVERAGES, STANDARD ERRORS, AND 95-PERCENT CONFIDENCE LEVELS FOR HALIBUT STEAKS ½-INCH, 1-INCH, AND 1½-INCH THICK.

The initial internal temperature of 27° F. was selected as the preoven temperature for the frozen halibut steaks because it represented the temperature in the average ice-cube compartment in a household refrigerator. Oven temperatures of 300°, 350°, 375°, 400°, 450°, and 500° F. were used. Because the optimum temperature for cooking fish could be expected to fall within the range of 350° to 400° F., 375° F. was also included in the series.

Commercially-frozen halibut was purchased from a wholesaler because with a bandsaw he could accurately and quickly cut frozen halibut into steaks ½, 1, or 1½ inches thick. The 1½-inch steaks were cut from the collar section of the fish because it was relatively easy to get a single 300-gram weight from this chunky portion. As the cutting progressed toward the center of the halibut, single 1-inch steaks were cut; next, double 1-inch (600 grams) steaks; and finally ½-inch steaks (fig. 1).

Each steak was wrapped in heavy-weight aluminum foil and stored at 0° F. until used.

A recording potentiometer with glass-covered copper-constantin thermocouples was used to record the internal temperature of the steaks as they were being cooked. To standardize the temperature of the ovens of the household-type electric range, special thermostats were installed to limit the fluctuation in oven temperature to plus-or-minus 10° F. In the preparation of the steaks for baking, they were trimmed to exactly 300 grams. The frozen samples then were brined for 1 minute in a solution of ½ cup salt to 1 quart of tap water to season the steaks and start the thawing process. After the excess moisture was wiped off, an ice pick was used to make an opening for the insertion of the thermocouple in the 1- and 1½-inch steaks. An electric drill was used to form this opening in the ½-inch steaks while they were still frozen because there was danger of the ice pick piercing the opposite surface of the thin steaks.

The partially-thawed steaks were placed on a tinned-steel baking sheet. The thermocouple then was inserted. When the internal temperature reached 27° F., the steak was placed in the preheated oven, and the timing device was started. As soon as the potentiometer recorded an internal temperature of 155° to 160° F. in the steak, the timing apparatus was stopped. The steak was taken out of the oven, and the temperature allowed to drop several degrees before the thermocouple was removed to check the maximum temperature reached. After the steak cooled an additional ½ hour, it was removed from the baking sheet, and its weight recorded. The loss in weight was calculated. Any unusual circumstances or irregularities were noted on the data sheet.

DISCUSSION

The statistical measures used were those that were recommended by the Statistics Section, U. S. Fish and Wildlife Service, Seattle, Wash. The average, the standard error, and the 95-percent confidence interval were computed. The average was calculated by dividing the sum of the samples by the number of samples. The standard error, which is a measure of variability of the same average, was found by dividing the standard deviation by the square root of the number of cases. The 95-percent confidence interval was computed by taking the mean, plus or minus t_{α} [2] times the square root of the variance over the number of samples.

The charts in figure 1 show (1) the range of cooking time in minutes for ½-, 1-, and 1½-inch steaks at the various oven temperatures, (2) the standard error of the mean, and (3) the 95-percent confidence level for the mean. Because there are 95 chances in 100 that the 95-percent confidence level will contain the true mean, this interval might be used as the standard cooking time. Table 1 summarizes these intervals for ½-, 1-, and 1½-inch steaks cooked at different oven temperatures.

Table 1 - Confidence Intervals of 95 Percent for ½-, 1-, and 1½-Inch Steaks

Thickness of Steaks	No. of Samples	Oven Temperature	Time Intervals	Range
			. . .(Minutes)	. . .
½-inch	13	300° F.	24.5 to 30.5	6.0
	13	350° F.	18.2 to 21.6	3.4
	12	375° F.	16.8 to 19.2	2.11
	12	400° F.	14.1 to 17.5	3.4
	12	450° F.	11.4 to 14.0	2.6
	12	500° F.	11.2 to 12.6	1.4
1-inch	15	300° F.	45.1 to 51.1	6.0
	14	350° F.	29.9 to 34.8	4.9
	17	375° F.	26.8 to 32.2	5.4
	13	400° F.	25.7 to 27.7	2.0
	12	450° F.	20.2 to 23.8	3.6
	13	500° F.	20.6 to 24.2	3.6
1½-inch	13	300° F.	52.1 to 57.7	5.6
	14	350° F.	40.5 to 46.3	5.8
	12	375° F.	37.4 to 41.6	4.2
	14	400° F.	34.9 to 40.3	5.4
	13	450° F.	26.9 to 31.3	4.4
	12	500° F.	26.5 to 29.5	3.0

RESULTS

It was observed that the longer the cooking time, the less accurate were the predictions that could be made on cooking time. For example, the cooking time for ½-inch steaks at 300° F., varied from 18 to 36 minutes. With greater variability in the cooking time at the lower temperatures, a certain measure of subjective judgment must be used. Therefore, the 95-percent confidence interval will be useful as a guide because the average time required to cook a ½-inch steak at 300° F. will be between 24.5 to 30.5 minutes 95 percent of the time. Conversely, the cooking time at higher temperatures can be given more accurately with a minimum of judgment expected on the part of the homemaker. For example, ½-inch steaks cooked at 500° F. required 11 to 14 minutes and the 95-percent confidence interval was between 11.2 to 12.6 or plus or minus 1.4° F. A similar comparison was shown with both 1- and 1½-inch steaks cooked at 300° F. and 500° F.

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[2] T SUB ALPHA.

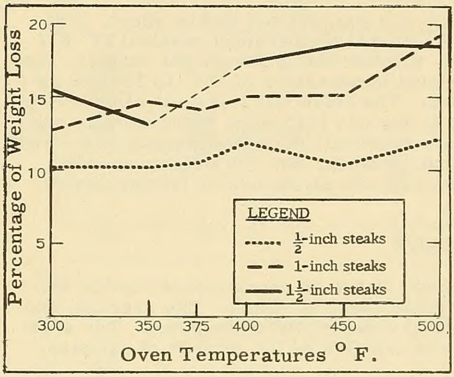

FIG. 3 - PERCENTAGE OF WEIGHT LOSS IN HALIBUT STEAKS AFTER COOKING.

There was an increased odor and a visible dehydration of the steaks at temperatures of 400° F. and above. With higher oven temperatures there was a general increase in weight loss (fig. 3). Most of the samples lost between 10 percent and 20 percent of their weight. At 300° F., the weight losses averaged between 10 percent and 15 percent; at 500 F., the weight losses averaged between 13 percent and 19 percent. The weight loss for ½-inch steaks was consistently lower than that for the other thicknesses, even though more surface area was exposed in these thinner steaks. The short cooking time involved may be the factor that keeps the weight loss low. Some inconsistencies, however, are as yet unexplained.

CONCLUSION

The standard cooking times (the time it takes to reach an internal temperature of 155° to 160° F. from 27° F.) established by the data for ½-, 1-, and 1½-inch frozen halibut steaks at various oven temperatures seem to be sufficiently reliable to be useful. The average, the standard error, and 95-percent confidence interval for the mean are given. Since 95 times out of 100, the 95-percent confidence interval contains the true mean, it is believed that this interval will be helpful as a guide in cooking fish.

The study has emphasized the need for investigation into related problems, such as controlled experiments concerning weight losses. Because of the limited number of samples, additional research will be necessary before any of these data are utilized as instructions on packages of frozen fish.

A further study is in progress. The object of this study, Part III, will be to obtain data on the cooking time required to raise frozen halibut steaks at different predetermined preoven temperatures to an internal temperature of 155° F. to 160° F.

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1952. EFFECTS OF INTERNAL TEMPERATURE AND OF OVEN TEMPERATUE ON THE COOKING LOSSES AND THE PALATABILITY OF BAKED SALMON STEAKS. FOOD RESEARCH, VOL. 17, NO. 2 (MARCH-APRIL), PP. 136-143.

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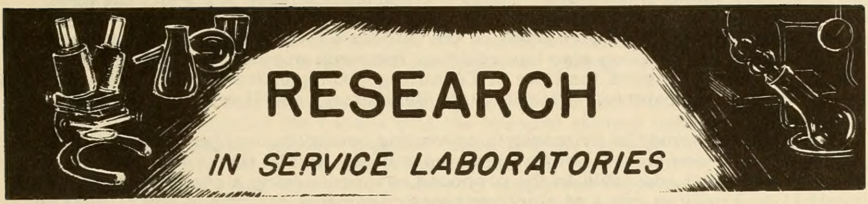

RESEARCH IN SERVICE LABORATORIES

FROZEN FISHERY PRODUCTS STORAGE LIFE EXTENDED BY GLUCOSE-SALT BRINE GLAZE

Studies on a carbohydrate-base glazing liquid have shown such materials may become of potentially great value in the prevention of freezer-burn (desiccation) and rusting (oxidative discoloration) in frozen fishery products during extended storage. The moisture-retaining property of the carbohydrate film glaze is considered to be responsible for the protection of the stored food product. These studies were conducted by the Bureau of Commercial Fisheries' Seattle Technological Laboratory.

Freezer-burn and rusting are two of the most important causes of loss of quality in stored frozen foods. Many attempts have been made to develop an edible liquid which, when frozen on the surface of the product, would prevent loss of moisture from, and accessibility of oxygen to, the product. Most such liquids when studied were themselves vaporized and became permeable to oxygen. Continued reglazings were necessary, a procedure not always commercially feasible.

It became obvious that a potentially successful glaze must be of such a nature as to undergo only minimum vaporization. This principle was exploited in the Service's developmental freezing-fish-at-sea investigations at the Boston Technological Laboratory. Fish frozen in a refrigerated glucose-salt brine evidenced a lasting crack-free glaze which protected the fish during its subsequent cold storage. This work has since been successfully applied to the freezing of shrimp on board vessels at sea. At last report, five commerical vessels had installed such glucose-brine immersion freezing machinery to preserve their catch during long voyages at sea and during subsequent storage in refrigerated warehouses.

A commercial glucose-based product, submitted by a local industry member to the Seattle Laboratory for testing, appears also to fulfill this requirement. Samples of treated salmon steaks, usually particularly susceptible to discoloration, were compared after an extended storage period with salmon steaks which had been glazed with water. The treated steaks were, in all cases, of marketable quality, while the water-glazed steaks had deteriorated to such an extent as to be considered inedible.

* * *

NUCLEAR RADIATIONS FOR PRESERVATION OF FISH

The "Atoms for Peace Program" and the new atomic age with its potentially revolutionary effect on food processing has been brought home to the fishing industry through a nationwide study on the use of nuclear radiations for the preservation of fish. The study was inaugurated by the United States Fish and Wildlife Service Bureau of Commercial Fisheries with funds provided by the Saltonstall-Kennedy Act of 1954.

Two processing techniques, "radio-pasteurization" and "cold-sterilization," born of studies in atomic energy and promising possible enhancement of the iced-storage life of fish, are under study at the Bureau's five technological laboratories. The Technological Section also has contract research work on this problem under way at the Massachusetts Institute of Technology, Oregon State College, Food Chemical Research Laboratories, Florida State University, and Maryland State College.

The present study is primarily a screening operation designed to select, for possible initial commercial utilization, those of the edible species of fish and shellfish that are most adaptable to the proposed new processing methods. High intense levels (1 to 3 million rep.) of electromagnetic (gamma) radiations and of ionizing (electron) radiations are being used to study the feasibility of "cold-sterilizing" the fishery product, that is to kill all bacteria and spores without recourse to the steam-sterilization processes commonly used in present-day operations. Lower levels (100,000 to 1,000,000 rep.) of both types of radiation are being used to kill the great majority of the active bacteria and thus to extend the possible iced-storage life of the product over that normally attained through the use of ice alone. The relative efficiencies of the two types of radiation and the two types of processing will be compared and evaluated in terms of commercial utilization.

Radio-pasteurization, the low-level radiation technique which kills a majority of the bacteria in a product, appears to be the most promising process and is being emphasized in these studies. Coupled with other processing methods such as refrigeration and prepackaging, this technique may revolutionize the present methods of marketing, making available for the first time to our inland population fresh unfrozen fish of a quality equivalent to that enjoyed by our coast and lake-shore dwellers.

NOTE: "REP." MEANS ROENTGEN EQUIVALENT, PHYSICAL=AMOUNT OF RADIATION ABSORBED EQUAL TO 93 ERGS PER/GRAM IN UNIT DENSITY MATERIAL.

* * *

QUALITY STANDARDS

FROZEN RAW BREADED SHRIMP QUALITY STANDARDS GETTING TRY-OUT: Quality standards for frozen raw breaded shrimp may be in the offing for the United States consumer, the Assistant Secretary for Fish and Wildlife announced May 22.

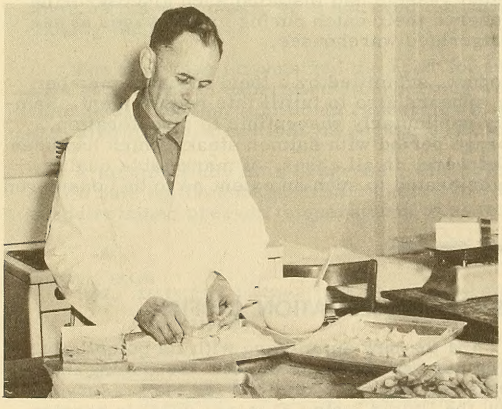

FIG. 1 - PREPARATION OF FROZEN RAW BREADED SHRIMP OF KNOWN BREADING CONTENT.

The proposed standards are the result of the Department of the Interior's cooperative efforts with the breaded shrimp industry, the National Fisheries Institute, and the Department of Agriculture.

A 60-day trial period is now in effect to give processors, buyers, distributors, and other interested parties an opportunity to try out the standards and to send their observations to the Department of Agriculture which has the legal responsibility for promulgating such standards. If there is substantial agreement on the proposed standards, a notice of final rule making will be published at the end of the 60-day period.

Because these standards employ a new approach to the grading of food products, the Department of the Interior urges all interested groups to critically evaluate the standards under commercial conditions.

The research and development of the standards, up to this point, have been the responsibility of the Bureau of Commercial Fisheries of the United States Fish and Wildlife Service. Funds for the project were made available by the Saltonstall-Kennedy Act of 1954 for the betterment of the domestic fishing industry.

The National Fisheries Institute, acting as the contract research agency for the Service, has supplied the liaison with the breaded shrimp industry essential to the standards program, and has supplied consulting services at meetings and conferences. A committee of industry technologists and representatives of the breaded shrimp producers and distributors actively supported the Service's scientific staff in the studies of the product and the processing procedures necessary to insure development of realistic standards.

The proposed standards apply to clean, wholesome, headed, peeled, and deveined shrimp which have been breaded and frozen. The grades include "U. S. Grade A" and "U. S. Grade B." Quality below these grades would be classified as substandard.

When the standards become effective the Department of Agriculture will offer an inspection and certification service on a fee basis. The standards do not include labeling, since labeling regulations are the responsibility of the Food and Drug Administration, Department of Health, Education and Welfare.

NOTE: SEE *COMMERCIAL FISHERIES REVIEW*, JUNE 1957, PP. 65-67 FOR THE PROPOSED STANDARDS.

TECHNICAL NOTE NO. 39 - FROZEN TUNA SAMPLER

PREFATORY ABSTRACT

A MOTOR-DRIVEN DEVICE, USED FOR SAMPLING FROZEN TUNA (FOR SUBSEQUENT DETERMINATION OF SALT CONTENT), IS DESCRIBED. THE DEVICE CONSISTS ESSENTIALLY OF A HOLLOW TUBE AND AN ARBOR. ONE END OF THE TUBE IS SERRATED AND SHARPENED TO DRILL EASILY INTO THE MEAT OF THE TUNA; THE OTHER END FITS INTO THE ARBOR, WHICH IN TURN FITS INTO THE CHUCK OF AN ELECTRIC-DRILL MOTOR. THE TUBE IS QUICKLY DETACHABLE FROM THE ARBOR FOR EASY REMOVAL OF THE CORE OF TUNA MEAT.

BACKGROUND

Americans are becoming increasingly conscious of the possible undesirable effects of excessive salt in the diet. The processors of canned tuna, being aware of this fact, strive to maintain a uniform salt content in their products. The excessive content of salt in some lots of brine-frozen tuna, however, make it difficult to maintain the desired level.

In view of the large number of tuna unloaded from a fishing vessel at one time, the considerable variability of salt content from one individual tuna to another, and the need for minimizing the destruction of the tuna meat simply for sampling purposes, a study was made of possible sampling techniques. This study pointed to a coring device as being the logical tool.

CONSTRUCTION

The sampler finally devised is shown in figures 1 and 2. This device, which is powered by an electric-drill motor, consists of two parts: a core-drill tube and an arbor.

The core-drill tube (A) is of thin-wall steel tubing, with a $\frac{3}{4}$-inch inside diameter and a length of $7\frac{1}{2}$ inches, but it can be altered in dimensions to produce any size core desired. The tubing is made of steel in order that the teeth may be case-hardened. Tubing with a wall $\frac{1}{32}$-inch thick works best; it cuts a narrow kerf and enters the frozen meat readily. Teeth are filed on one end of the tubing in such a manner that the cutting edge of the teeth face in the direction that the electric drill rotates. Each alternate tooth is set slightly inward to cut a core smaller than the inner diameter of the core drill. The remaining teeth are set slightly outward to clear a path for the tubing. Several bands are rolled onto the body of the tube with a knurling tool to provide a hand grip.

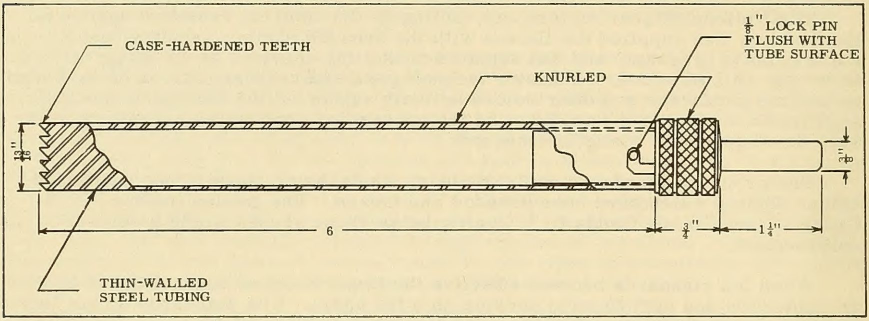

FIG. 1 - FROZEN TUNA SAMPLER.

The core drill is held in the electric drill by means of an arbor (B), which has a $\frac{3}{8}$-inch shank on one end to fit into the chuck of the electric drill and has a pilot turned on the opposite end to carry the core drill. This pilot must fit snugly into the tubing, to eliminate any slack. A loose fit will cause the core drill to whip and run off center, making the drill difficult to start into the frozen fish. A knurled collar is turned on the arbor, back of the pilot, to provide a hand grip for removing the core drill from the arbor. A pin is fitted through the pilot and, projecting just the thickness of the tubing on each side of the pilot, provides a quick on-and-off locking device. The tubing is slotted to fit over the pin so that an eighth of a turn of the tubing will allow the core drill to be withdrawn from the pilot.

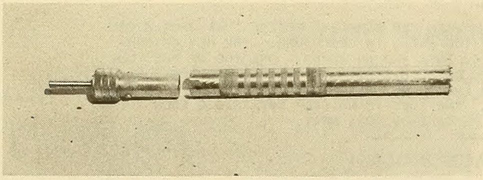

FIG. 2 - FROZEN TUNA SAMPLER.

OPERATION

The core drill has been used with air-frozen as well as the brine-frozen tuna; however, considerably more pressure is required with frozen tuna taken directly from a storage room or freezer at 0° F. or colder than with brine-frozen tuna sampled during the unloading at the cannery. The brine-frozen tuna are normally unloaded from the fishing vessel when the temperature of the tuna is at 20°-to 24° F., at which temperature the tuna meat is rigid but not hard.

The drill must be held firmly when a core is taken and should be pushed smoothly as it enters the meat. When the desired depth of core is reached, the drill is held stationary, and the friction between the inner wall of the tube and the core is sufficient to hold the core while it is broken loose and removed. Dipping the core drill into hot water for a moment permits the core to be shaken out of the tube, or pushed out by means of a small piece of wood used as a plunger.

--BY LYNNE G. MCKEE, FISHERY PRODUCTS TECHNOLOGIST,
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THREADFIN SHAD SHOWS PROMISE AS FORAGE FISH IN COLORADO RIVER AND LAKES

The threadfin shad, a small prolific forage fish of Tennessee and other southeastern States, has moved west--and fishing in Lake Mead, Havasu, and Mojave and at other places along the Colorado River is getting better, according to reports reaching the U. S. Fish and Wildlife Service.

As a result, prospects are bright for the three States bordering these waters--Nevada, Arizona, and California--to develop a sport fishery of national popularity.

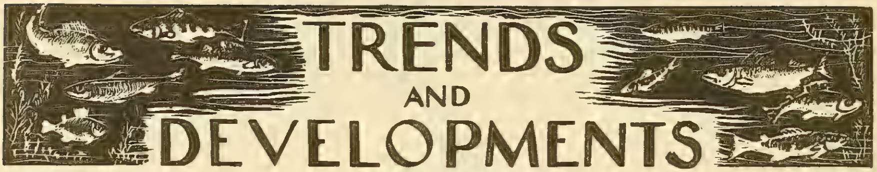
Fishery biologists of the three States are not yet definitely linking the improved fishing results with the establishment of the threadfin, but they report that anglers in Lake Havasu who fish in the proximity of shad schools catch the most bass. Other facts which are either coincidental with the establishment of threadfin shad in the Colorado River waters or directly attributable to it include: the average growth of bass has increased over two inches a year; there is a greater survival of bass spawn; bass are biting better and biting earlier in the season; crappie fishing in Lakes Mead and Havasu is improving and the individual fish are bigger. There are also indications that when threadfin shad are available for trout, the trout are using it as forage.

Nevada became interested in threadfin shad after investigating reports of consistently poor fishing in Lake Mead. As a result of a Federal aid project started in 1951, Nevada decided that because of the fluctuating level of Lake Mead, shallow-water vegetation, vital as cover for small bass, did not have a chance to develop. This had the effect of leaving the small bass exposed to the predations of the larger fish and the natural stocking of the lake virtually stopped. The threadfin shad seemed to offer a solution; it has a high reproductive rate, is the right size for predators, and does not compete with bass for food.

Nevada made its first effort to establish threadfin shad in its waters in 1954 when it secured nearly 2,600 young fish from Tennessee. Unseasonable cold winter weather killed the entire shipment. California had also obtained threadfin shad from Tennessee and had a good survival. California contributed 125 shad to Nevada's program. The shad spawned and respawned to become thousands and formed the basis for Nevada's shad program. In the meantime Arizona obtained a stock from the Fish and Wildlife Service hatchery in New Mexico and began its part of the planting program.

Nevada planted some of its threadfin shad in Lake Mead and some in Lake Mojave. The fish "took hold" at once and in a short time schools of thousands of these shad were noticed in Lake Mead. There was similar success in Lake Mojave. Plantings in Havasu and the Colorado River itself were equally successful. Now the threadfin shad, although of no value in itself as a food fish, is providing needed forage for trout, bass, and crappies.

The threadfin shad is a small relative of both the American shad--the well-known table delicacy and angler favorite--and the common gizzard shad. (The latter sometimes is a nuisance fish, becoming overly populous and growing so large that mature individuals cannot be eaten by bass and other game fishes.) Seldom does the threadfin shad exceed six inches in length and therefore is a food source for gamefish throughout its life. Because it feeds in areas not frequented by small bass and feeds on items young bass ignore, there is no competition for food.



TRENDS AND DEVELOPMENTS

American Samoa

TUNA CANNING COMPANY PLANS TO EXPAND: The United States tuna canning company located in American Samoa is planning the construction of a larger refrigeration plant, a new dock adjacent to the cannery, and dwelling houses for stateside employees. At the present time due to good production all warehouse space is occupied and operations are limited by this lack of space.

The freight vessel *Thorshall* left American Samoa about March 9 after loading 900 tons of canned tuna (*Samoa Bulletin*, a weekly newspaper published in Apia, Western Samoa, March 15, 1957).

California

OPEN SARDINE SEASON ADVANCED ONE MONTH: A bill signed by the Governor of California on June 4, 1957, advances the opening of the Southern California commercial sardine season from October 1 to September 1. The new opening date is effective immediately. Now the Southern California sardine season will run from September 1 to December 31. Formerly it lasted from October 1 to February 1.

The Northern California sardine season will now run from August 1 to December 31.

The earlier season is predicted to enable bigger sardine catches because fishermen in the past few years have reported sighting large schools of sardines off San Pedro during September when in past seasons the closed season was in effect. Sardine landings have been light during the past few years.

Cans--Shipments for Fishery Products, January-March 1957

Total shipments of metal cans for fish and sea food during January-March 1957 amounted to 20,882 short tons of steel (based on the amount of steel consumed in the manufacture of cans), compared to 17,336 short tons in January-March 1956. Some of the increase in the use of cans for fishery products is due to increased packs of canned mackerel and anchovies and the buying of cans for the heavy summer packing season.

Note: Statistics cover all commercial and captive plants known to be producing metal cans. Reported in base boxes of steel consumed in the manufacture of cans, the data for fishery products are converted to tons of steel by using the factor: 23.0 base boxes of steel equal one short ton of steel.

Federal Purchases of Fishery Products

DEPARTMENT OF DEFENSE PURCHASES, JANUARY-MAY 1957: Fresh and Frozen Fishery Products: For the use of the Armed Forces under the Department of Defense, 2.6 million pounds (value $1.3 million) of fresh and frozen fishery products were purchased in May by the Military Subsistence Market Centers. This exceeded the quantity purchased in April by 43.4 percent, but was 3.0 percent less than the amount purchased in the same month a year ago. The value of the purchase this May was higher by 31.3 percent as compared with the previous month, but lower by 3.6 percent from May a year ago.

Table 1 - Fresh and Frozen Fishery Products Purchased by Military Subsistence Market Centers, May 1957 with Comparisons

QUANTITY				VALUE			
May		Jan.-May		May		Jan.-May	
1957	1956	1957	1956	1957	1956	1957	1956
(1,000 Lbs.)				($1,000)			
2,635	2,715	10,002	9,494	1,274	1,322	5,106	4,855

For the first five months of 1957 purchases totaled 10.0 million pounds, valued at $5.1 million--an increase of 5.4 percent in quantity and 5.2 percent in value as compared with the same period of 1956.

Prices paid for fresh and frozen fishery products by the Department of Defense in May averaged 48.3 cents a pound, about 4.5 cents less than the 52.8 cents paid in April, and 0.4 cents below the 48.7 cents paid during May a year ago.

Table 2 - Canned Fishery Products Purchased by Military Subsistence Centers May 1957, with Comparisons

Species	QUANTITY		VALUE
	May	Jan.-May	May
	1957	1957	1957
	(1,000 Lbs.)		($1,000)
Tuna	346	1,187	153
Salmon	-	992	-
Sardine	42	73	14

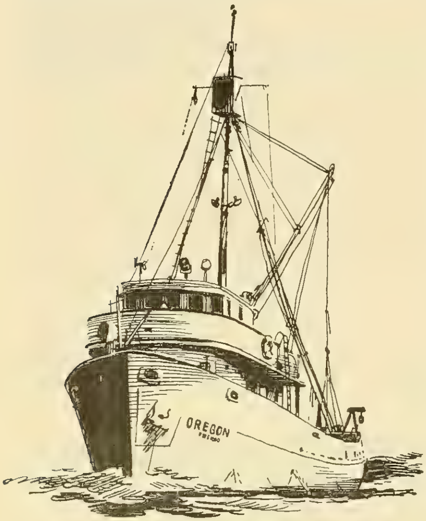
Canned Fishery Products: Tuna and sardines were the principal canned fishery products purchased for the use of the Armed Forces during May. The Armed Forces installations generally make some local purchases not included in the data given. Actual total purchases are higher than indicated, but it is not possible to obtain local purchases.

Fisheries Loan Fund

LOAN FUND APPLICATIONS NEAR LIMIT: A total of 234 applications for fishery loans, totalling $9,838,861, had been received by the Fish and Wildlife Service by May 20.

Of these, 99 have been approved for a total of $2,842,217, and 31 amounting to $502,466 have been declined because of ineligibility or other reasons.

Fishery Methods and Equipment Specialist Examination



The U. S. Civil Service Commission announced on June 11, 1957 (Announcement No. 108 B) that applications will be accepted for the position of Fishery Methods and Equipment Specialist in Grades GS-5 to GS-12. Entrance salaries range from $3,670 to $7,570 a year. The Fish and Wildlife Service requires Specialists for exploratory fishing and for improving methods of fishery operations. Only commercial fishermen with the required specialized experience, or men trained in fishery engineering, technology, or biology should apply. The positions require sea duty in varying localities, chiefly in the Atlantic and Pacific Oceans. This is a continuously open unassembled examination.

Requirements are for 3 years of general experience and from one to four years (depending on the grade) of specialized experience. The successful completion of courses of study in a resident school or institution above high-school level with major study in the fields of fishery technology, fishery engineering, or fishery biology may be substituted on the basis of one year of education for one year of the required general or specialized experience. Types of qualifying experience are as follows: General: mate or engineer on a fishery vessel, net loft supervisor, commercial fisherman, licensed deck officer, and similar or closely related types of experience; Specialized: port captain or fleet supervisor of a fishery fleet, master of a fishery vessel over 25 net tons, navigator of fishing vessels operating offshore, designer of fishery vessels and equipment, cannery superintendent including supervision of fish production, technical employment in conducting fishery exploration or in developing fishery gear or equipment, and other closely related types of experience. Fishery Methods and Equipment Specialists advise on, direct, examine, analyze, or perform work in connection with: (1) the appraisal of fishery resources; (2) methods and techniques for locating new fishing areas and taking fish; (3) designing, fabricating, installing, and testing improved equipment for taking fish and for handling, storing, preserving, processing, and transporting fish at sea and on shore.

The duties include studying the occurrence and behavior of fish at sea and the best methods of locating them by visual, sonic, electronic, or other techniques; identifying species, and recording the number and weight of fish and the weather conditions at time of capture; studying the effectiveness of various kinds of bait and oxygen concentration; temperature, salinity, and other water conditions affecting survival of bait fishes; making tests on the effectiveness of varied types of fishing gear and studying the influence of weather, currents, and other conditions on their efficiency; analyzing data obtained at sea; and designing new equipment or methods, or recommending modification of those presently used, for promoting the economical capture of ocean fish.

Great Lakes Fishery Investigations

OPERATIONAL PLAN FOR RESEARCH VESSEL "CISCO" IN 1957: The Lake Erie research program will be expanded this year by the Service's Great Lakes Fishery Investigations. A field station will be established and a research vessel, the M/V Musky, will be assigned to the investigation. The M/V Cisco, although not permanently connected with the study, will spend the 1957 season in Lake Erie, and will assist in preliminary fishery surveys and experimental fishing.

Although commercial fish production in Lake Erie has suffered less than in the other Great Lakes, there has been a steady deterioration in the species composition of the stocks. In general, commercially-valuable species have become less abundant while low-priced and unsaleable varieties have increased--some tremendously. Some fishermen believe that the less valuable species have an adverse effect on the high-priced ones, either as competitors, or as predators on young and eggs. In addition, some of the unutilized fish become so numerous at times that they seriously hamper fishing operations. Drastic reduction of populations of these less desirable varieties through new commercial markets has been suggested. Not enough is known, however, about the inter-relations of the species to predict with any degree of certainty what effects changes in populations of one species might have on the others. A primary objective of the M/V Cisco operation during the 1957 season will be a study of inter-relations. Trawls, gill nets, and small-mesh seines will be used for systematic experimental fishing in various areas throughout the season. The catches will be examined for species composition and the different species will be studied for sex, age, and length distribution. Stomachs will be collected to learn as much as possible of the predator-prey relationships. A special attempt will be made to collect young fish since they are not common in samples taken from the commercial catch and little is known about them.

Extensive experimental trawling will be done for two other purposes: to determine how much trawling is needed in order to have obtained a reasonable representative sample, and to explore the feasibility of a commercial trawl fishery in Lake Erie. Plans include a certain amount of tagging of some of the more important species in the populations, mostly for fish movement studies.

No extensive hydrographic or limnological work will be carried out. Plankton samples, however, will be collected at all fishing stations and bottom samples at all trawling stations. Fine-mesh plankton nets will be used in order to catch organisms of all sizes. The main purpose will be to study changes in abundance of the several varieties of plankton and to record the presence of fish fry. Bottom samples will be collected in order to have a record of the composition of bottom organisms as they are today. If in the future a trawl fishery should develop, it would then be possible to ascertain how the dragging might affect the composition and production of bottom organisms.

During the early part of the season the Cisco will confine its operations to intensive studies of a few selected areas of Lake Erie.

* * * * *

TRAWLING IN SHALLOW-WATER AREA OF LAKE ERIE OFF SANDUSKY, OHIO (M/V "Cisco" Cruise 1): Trawl catches in Lake Erie east of Kelly's Island, east of South Bass Island, and west of South Bass Island were dominated by smelt and sheepshead, with yellow perch especially well represented, during Cruise 1 (April 30-May 13) of the Service's research vessel Cisco. All fishing during the cruise was carried out in the shallow-water area among the islands off Sandusky, Ohio. The objective is to study the inter-relations of the various fish species in Lake Erie. Also common in many of the catches were emerald shiners, spotted shiners, and trout-perch. Taken in smaller quantities were walleyes, channel catfish, white bass, madtoms, silver chubs, and logperch. Many of the perch had just recently spawned but some had not spawned yet. There were an especially large number of perch in the 3- to 4-inch size range (probably yearlings). Most of the walleyes taken in trawls were in the 7- to 9-inch range.

A daylight midwater tow at 25 feet over 40-foot bottom east of Kelley's Island produced 840 smelt and 128 emerald shiners. The water in this area was thermally stratified and the fish were taken just over the cold layer. A similar tow west of South Bass Island took only 21 smelt, 5 emerald shiners, and 1 white bass. The water was not stratified in this area. An identical tow after dark at the latter location caught 19 smelt, 195 emerald shiners, 1 perch, and 1 trout-perch. Another midwater tow just 6 feet off the bottom produced a catch similar to previous bottom drags in the area, except that there were many more emerald shiners and noticeably fewer large perch and sheepshead.

Experimental nylon gill nets (mesh sizes 1-, $1\frac{1}{2}$-, 2-, $2\frac{1}{4}$-, $2\frac{1}{2}$, $2\frac{3}{4}$-, 3-, and 4-inch) were set off Kelly's Island in $6\frac{1}{2}$ fathoms. The catch was predominately yellow perch in all meshes except the 4-inch and 1-inch sizes. The 4-inch mesh took mostly sheepshead, the 1-inch primarily smelt. The perch catch in the other meshes was very large; walleyes, white bass, channel catfish, silver chubs, blue pike, burbot, and white sucker were taken in smaller numbers. An oblique gill net set nearby the same night caught perch, sheepshead, channel catfish, and smelt near the bottom and walleyes, blue pike, white bass, and smelt at midlevels.

A half-meter plankton net towed at night at various depths caught a few smelt fry at the surface, but no other fish. The same net towed in the daytime caught smelt fry at midlevels.

The water off Sandusky was stratified thermally until the end of the cruise when it became homothermous, probably due to the strong winds that prevailed. Surface temperatures ranged from 9.7° to 15.6° C. (About 50°-60° F.)

Note: Scientific names for species mentioned: smelt (Osmerus mordax), sheepshead (Aplodinotus grunniens), yellow perch (Perca flavescens), emerald shiners (Notropis atherinoides), spotted shiners (Netropis hudsonius), trout-perch (Percopsis omiscomaycus), walleyes (Stizostedion vitreum vitreum), channel catfish (Ictalurus lacustris), white bass (Lepibema chrysops), madtoms (Schilbeodes sp.), silver chubs (Hybopsis storerianus), logperch (Percina caprodes), blue pike (Stizostedion vitreum glaucum), burbot (Lota lota), and white sucker (Catostomus commersoni).

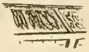
Migrants to West Coast Expanding Market for Local Fresh Fish and Shellfish

Newcomers to the West Coast from other states buy at first much less fresh fish or shellfish than the native population--but buy more of these products the longer they stay. Particularly among migrants from the Central or Mountain States who develop a taste for locally-caught fresh fish, the consumption rate moves upward steadily from year to year.

Only about 15 percent of the newcomers bought fresh crab during their first year on the West Coast as against 58 percent of the migrants living there ten years or more. When measured in terms of percentage increase over the first year this amounts to a startling increase of 297 percent. Corresponding percentage increases for fresh fish were sole 153, halibut 93, and salmon 78. Industry leaders are hopeful that educational and promotional work may shorten the taste-forming period for fresh fish.

The survey made by Oregon State College for the United States Fish and Wildlife Service with Saltonstall-Kennedy funds also revealed that among families migrating from inland areas length of residence on the West Coast had little effect upon increasing the low per capita consumption of frozen fish or shellfish.

With the increasing influx of migrants from the prairie and mountain states to California, Oregon, and Washington, this growing market for fresh fish and shellfish is of considerable interest to the Pacific Coast fishing industry. Frozen fish and shellfish, often imported or shipped from areas other than the Pacific Coast, gives the local fisherman plenty of competition. However, the industry has the fresh market on the West Coast largely to itself.



North Atlantic Fishery Investigations

OCEAN PERCH TAGGED IN 1956 RECAPTURED AT EASTPORT, MAINE: During a joint cruise aboard the Canadian Department of Fisheries research vessel Harengus, biologists of the U. S. Fish and Wildlife Service and the Fishery Research Board of Canada recaptured 12 ocean perch that had been tagged by Service biologists in August 1956. The tagged fish were among 60 ocean perch that were caught by hook and line at the original tagging site in Eastport Harbor.

A small otter trawl was used to make a series of tows on the smooth bottom in the Eastport area and the number of each species of fish captured was recorded. Representative samples of fish and invertebrates were preserved at each station. Ocean perch were found to be scarce at all otter trawl stations occupied. Large cod, haddock, pollock, and sea dab were taken in most tows. One station yielded a fair-size catch of sardine herring, and some samples of very small whiting and cod were taken at several stations.

Recapture of tagged ocean perch confirms observations obtained from a study of ocean perch otoliths (ear bones) that this species has a very slow rate of growth. From August 1956 to May 1957 the average rate of growth of the 12 recaptured ocean perch was only 3 millimeters. The recaptured ocean perch mark the first successful attempt to tag this variety in United States waters.

* * * * *

STUDIES ON DRIFT OF HADDOCK EGGS AND LARVAE CONTINUED (M/V *Albatross III* Cruises 93 and 94): Haddock, cod, pollock, and hake larvae were abundant over most of the Georges Bank area surveyed during the third (May 8-16) and fourth (May 22-29) of a series of cruises planned to study the relationship between the Georges Bank non-tidal drift and the drift of haddock eggs and larvae.

Approximately 2,400 miles of continuous plankton tows were made at the surface and 10 meters with Hardy Plankton Recorders and 260 Bathythermograph observations were taken; 130 salinity samples were collected; 28 one meter-net surface tows and 50 Heusen egg-net surface tows were made; 1,728 drift bottles and 3 transponding buoys were released; and 5 transponding buoys, previously released, were located. One transponding buoy missing during the April 25-May 2 cruise still could not be located.

Note: See *Commercial Fisheries Review*, June 1957 p. 29.

Radiation Preservation of Food

The technique of food preservation using atomic energy is based on the use of radiation to destroy organisms which cause food spoilage. Experiments on human food preservation by radiation are being conducted under the direction of the U. S. Army Quartermaster Corps. Radiation undoubtedly will be used in preserving foods for civilian consumption wherever it offers economic advantages which are attractive to the consumer.

However, radiation preservation has limitations. While the radiation sterilization process will kill bacteria, off-flavors and off-odors tend to result from applications large enough to kill all bacteria. Furthermore, the radiation preservation process will probably be used in conjunction with refrigeration, thermal preservation, or other preservation processes. The time scale of development to date indicates that within 5 years radiation preservation of some foods could begin on a practical commercial scale. Widespread commercial use of this technique must await development of cheaper sources of radiation energy and packaging techniques.

Radiation preservation of food does not appear likely to replace other methods of food preservation to any substantial extent in the near future. When the technology has been developed and is economically feasible, this method of food preservation probably will be a supplement to the other methods now available. The potential for small business probably will develop slowly, will be moderate in size and will be in connection with food processing and packaging. (Technical Aids for Small Business No. 52, "Small Business and the Industrial Applications of Atomic Energy," April 1957, issued by the Small Business Administration.)

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U. S. Foreign Trade

IMPORTS OF CANNED TUNA IN BRINE UNDER QUOTA PROVISO: The quantity of tuna canned in brine which may be imported into the United States during the calendar year 1957 at the 12½-percent rate of duty is limited to 44,528,533 pounds. Any imports in excess of that quantity will be dutiable at 25 percent ad valorem.

Imports under the quota from January 1-May 4, 1957, amounted to 12,540,107 pounds, according to data compiled by the Bureau of the Customs. This leaves a balance of 31,988,426 pounds of the quota which may be imported during the balance of 1957 at the 12½-percent rate of duty.

* * * * *

EDIBLE FISHERY PRODUCTS, MARCH 1957: United States imports of edible fresh, frozen, and processed fish and shellfish in March 1957 were higher by 23.2 percent in quantity and 27.8 percent in value as compared with the previous month. Compared with March 1956, the imports for March this year were up 8.0 percent in quantity and 15.4 percent in value. Imports for March 1957 averaged 29.8 cents a pound as compared with 27.9 cents a pound for the same month in 1956.

Table 1 - United States Foreign Trade in Edible Fishery Products, March 1957 with Comparisons

Item	Quantity			Value		
	March		Year	March		Year
	1957	1956	1956	1957	1956	1956
	(Millions of Lbs.)			(Millions of $)		
Imports:						
Fish & shellfish:						
Fresh, frozen & processed 1/....	67.8	62.8	786.5	20.5	17.5	231.6
Exports:						
Fish & shellfish:						
Processed 1/ only (excluding fresh & frozen)	7.9	6.3	82.8	1.4	1.3	19.2

1/ INCLUDES PASTES, SAUCES, CLAM CHOWDER AND JUICE, AND OTHER SPECIALTIES.

March 1957 imports increased as compared with February due to heavier imports of all types of fillets, shrimp, and canned fish. Comparisons this March with the same month in 1956 indicate an increase of about 11.6 percent in fillets and a 47-percent increase in canned tuna.

Exports of processed edible fish and shellfish in March 1957 decreased about 5.1 percent in quantity as compared with the previous month, but were 25.3 percent above March 1956. The March 1957 value of these exports was lower by 17.6 percent as compared with the previous month, but higher by 7.7 percent from the same month a year ago. The increase this March in quantity of 25.3 percent and only 7.7 percent in value as compared with a year earlier may be attributed to greater exports of low-value canned Pacific mackerel.

* * * * *

GROUNDFISH FILLET IMPORTS, MAY 1957: Imports of groundfish and ocean perch fillets and blocks in May 1957 amounted to 8.7 million pounds. Compared with the same month last year, this was an increase of 1.2 million pounds or 16 percent. The principal cause for this gain was a 2.0-million-pound increase in imports from Canada and Denmark. During May 1957 there were 271,000 pounds of groundfish fillets imported from the United Kingdom and 82,000 pounds from

Miquelon and St. Pierre, while there were none from either of these two countries during the corresponding month last year. Icelandic groundfish fillet exports to the United States during May 1957 were down 450,000 pounds as compared with exports reported for the preceding May. There were smaller imports from Norway and the Netherlands, while there were none from France, West Germany, and Greenland.

Imports of groundfish and ocean perch fillets and blocks into the United States during the first five months of 1957 totaled 56.3 million pounds--a decrease of 2.6 million pounds or 4 percent as compared with the same period of the previous year. Canada led all other countries exporting fillets to this country during 1957 with 41.8 million pounds, followed by Iceland with 10.1 million pounds. These two countries accounted for 92 percent of the total imports for the five-month period of 1957.

* * * * *

IMPORTS AND EXPORTS OF SELECTED FISHERY PRODUCTS, MARCH 1957: Imports: GROUNDFISH: Fillet imports of 6.3 million pounds during March were 7 percent more than in the same month of 1956. Imports of fillet blocks and slabs in March totaled 3.2 million pounds, up 14 percent from the same month a year ago.

Total imports of all groundfish fillets amounted to 34.8 million pounds in the first three months of 1957, about the same quantity as imported during that period of 1956. Of that total, Canada supplied 24.0 million pounds and Iceland 7.5 million pounds.

FROZEN TUNA: March imports were down 2 percent less than in the same month of 1956. The total for the year through March of 36.7 million pounds was 10 percent larger than during the similar 1956 period--albacore imports were up 38 percent; yellowfin and skipjack imports were down 4 percent.

CANNED TUNA: Imports of 4.5 million pounds during March were 47 percent larger than in March 1956. Imports during the first three months of 1957 were 13 percent above January-March 1956.

CANNED BONITO: March imports were down 28 percent from March 1956. The total for the first three months of 1957 dropped 10 percent below the same period in 1956--brine-pack imports were up 36 percent; oil-pack imports were down 23 percent.

CANNED SALMON: A million pounds were imported during March, 9 percent less than in the same month a year earlier. Total imports through March this year were 3 percent below a year ago. Japan was practically the sole supplier during 1957.

CANNED SARDINE: March imports totaled 2.1 million pounds, 38 percent greater than in March 1956. Total imports for the year through March were up 11 percent from a year ago.

SWORDFISH: About 2 million pounds were imported during March, a 13-percent gain over that month a year ago. Total imports for the first three months of 1957 were 4.4 million pounds, 2 percent less than during the same period a year ago.

SHRIMP: March imports of 5.5 million pounds were 9 percent greater than a year ago. The total for January-March of 15.4 million pounds was 22 percent less than that period of 1956. Imports from Mexico this year were 36 percent less than during the first three months of a year ago.

LOBSTERS: Imports of 3.9 million pounds during March were about the same as those of that month in 1956. January-March imports of 12.7 million pounds were 23 percent greater than a year earlier.

CANNED CRABMEAT: Imports of 1 million pounds in the first three months of the year were 14 percent less than during the same period of 1957. March imports of 543,000 pounds were 32 percent greater than in March 1956.

FISH MEAL: Imports of 13,326 tons during March were 55 percent greater than in March 1956. January-March imports of 22,631 tons were 18 percent less than the previous year.

Exports: CANNED SARDINES: Very little change in export trend with March exports of 1.8 million pounds--a decline of 64 percent from the same period a year earlier. Total exports of 6.4 million pounds for the first three months of 1957 also were down 64 percent from the same period a year earlier. Principal decline occurred in exports to the Philippines.

CANNED MACKEREL: March exports amounted to 4.3 million pounds, largely destined for the Philippines. Exports during the first three months of the year totaled 9.4 million pounds, about 4 times the quantity exported during all of 1956.

FISH OILS: March exports were up 11 percent to 15 million pounds, but the total for the year through March of 35.3 million pounds was 4 percent less than a year earlier.

Wholesale Prices, May 1957

The usual seasonal increase in landings of fish and shellfish which takes place in May was responsible for the 2.2 percent decline in the over-all edible fish and

Table 1 - Wholesale Average Prices and Indexes for Edible Fish and Shellfish, May 1957 With Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices1/ ($)		Indexes (1947-49=100)			
			May 1957	Apr. 1957	May 1957	Apr. 1957	Mar. 1957	May 1956
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					117.0	2/119.4	119.4	111.7
Fresh & Frozen Fishery Products:					128.2	2/132.2	132.0	120.6
Drawn, Dressed, or Whole Finfish:					107.9	2/120.0	123.4	113.3
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.08	.11	77.4	111.0	100.5	70.9
Halibut, West., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.29	.30	89.0	92.3	95.9	123.8
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.65	.60	145.2	134.8	139.8	140.5
Whitefish, L. Superior, drawn, fresh	Chicago	lb.	.67	.92	166.1	2/229.3	195.8	153.7
Whitefish, L. Erie pound or gill net, rnd., fresh	New York	lb.	.80	1.12	161.8	227.5	182.0	148.6
Lake trout, domestic, No. 1, drawn, fresh	Chicago	lb.	.52	.80	106.5	163.9	161.8	104.5
Yellow pike, L. Michigan & Huron, rnd., fresh	New York	lb.	.35	.32	82.1	75.0	173.5	68.0
Processed, Fresh (Fish & Shellfish):					143.2	140.4	142.7	126.1
Fillets, haddock, sml., skins on, 20-lb. tins	Boston	lb.	.32	.36	108.9	120.8	117.4	91.9
Shrimp, lge. (26-30 count), headless, fresh	New York	lb.	.96	.91	151.7	143.8	143.8	124.8
Oysters, shucked, standards	Norfolk	gal.	5.75	5.75	142.3	142.3	148.5	136.1
Processed, Frozen (Fish & Shellfish):					130.9	130.9	120.1	115.2
Fillets: Flounder, skinless, 1-lb. pkg.	Boston	lb.	.40	.40	103.4	103.4	103.4	103.4
Haddock, sml., skins on, 1-lb. pkg.	Boston	lb.	.30	.30	92.6	92.6	87.9	91.0
Ocean perch, skins on, 1-lb. pkg.	Boston	lb.	.29	.29	114.8	114.8	114.8	114.8
Shrimp, lge. (26-30 count), 5-lb. pkg.	Chicago	lb.	.94	.94	145.8	145.8	128.9	118.1
Canned Fishery Products:					101.2	101.2	101.5	99.0
Salmon, pink, No.1 tall (16 oz.), 48 cans/cs.	Seattle	cs.	22.65	22.65	120.0	120.0	120.0	120.0
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs.	Los Angeles	cs.	11.20	11.20	80.8	80.8	80.8	76.4
Sardines, Calif., tom. pack, No. 1 oval (15 oz.), 48 cans/cs.	Los Angeles	cs.	9.00	9.00	105.0	105.0	105.0	87.5
Sardines, Maine, keyless oil, No. 1/4 drawn (3-1/4 oz.), 100 cans/cs.	New York	cs.	7.70	7.70	81.9	81.9	84.6	89.9

1/Represent average prices for one day (Monday or Tuesday) during the week in which the 15th of the month occurs. These prices are published as indicators of movement and not necessarily absolute level. Daily Market News Service "Fishery Products Reports" should be referred to for actual prices.
2/Revised.

shellfish (fresh, frozen, and canned) wholesale index (117.0 percent of the 1947-49 average) from April to May 1957. But the May index was 4.7 percent higher than for the same month in 1956.

Lower prices for fresh large offshore haddock at Boston, frozen dressed Western halibut at New York City, and fresh-water fish accounted for the drop of 9.6 percent in the drawn, dressed, or whole finfish subgroup index from April to May. Only salmon was priced higher because supplies were light. Compared with the same month in 1956, the May subgroup index was down 4.8 percent principally because frozen dressed halibut prices were down 28.1 percent and more than offset the substantially higher prices for the other fish.

Fresh processed fish and shellfish prices in May were 2.0 percent higher than the previous month because the drop of 9.9 percent in the fresh haddock fillet prices at Boston was more than offset by a 5.5-percent rise in the fresh shrimp prices at New York City. Light supplies and good demand continued to strengthen the shrimp market. All fresh processed fish and shellfish prices in May were substantially higher (13.6 percent) than in the same month a year earlier.

There was no change in the prices for frozen processed fish and shellfish from April to May. However, this subgroup index in May was 13.6 percent higher than in May 1956 because of slightly higher prices for frozen haddock fillets at Boston and substantially higher prices for frozen shrimp at Chicago. Frozen shrimp inventories were lighter and demand was better this May than in the same month of 1956.

Canned fishery products prices in May remained at the April level. But this subgroup index was 2.2 percent higher than in the same month of 1956 because of higher tuna prices and substantially higher canned California sardines which have practically disappeared from the market. Canned Maine sardine prices this May were slightly lower than in May 1956.

World Markets for United States Fishery Products in 1956

Foreign markets bought less fishery products from the United States in 1956 than during the previous year, but this trade was still substantially larger than in 1950. Further liberalization in the trade restrictions applied by certain countries to fishery products from the United States was evident. Restrictions applied by countries in balance-of-payments difficulties have severely limited exports of fishery products since 1948. The United States fishery industries depend on foreign market outlets for many products.

More than 325 million pounds of edible and industrial fishery products (including fish oils and shell products) were shipped to foreign countries during 1956, according to a review of the United States fishery export trade made by the Bureau of Commercial Fisheries. These products were valued at $38.5 million. During 1955, 336 million pounds were exported, valued at nearly $40.0 million. The 1950 export trade totaled 264 million pounds, valued at $27.4 million (see table 1).

The decline in the 1956 trade was due for the most part to reduced exports of canned fish, particularly canned salmon and sardines. Fish oil and unmanufactured shell exports also declined slightly, but the export value for these products showed an increase over 1955 because of higher prices.

Canada in recent years has been the leading export market from the standpoint of value of trade (see table 2). In 1956 the total value of United States fishery products shipments to that country of $8 million were $2 million less than the $10 million reports in 1955. In 1950 those exports were valued at only $3 million. The value of canned sardine, salmon, and fish oil exports to Canada in 1956 declined, but the value of exports of fresh and frozen fish, oysters, shrimp, and clams increased over 1955. The value of exports of canned shrimp, canned oysters, fur-seal skins, and oyster and other shells for feed also increased.

Table 1 - United States Exports of Fishery Products, 1950, 1955, and 1956

Commodity	Quantity 1/			Value		
	1956 1/	1955	1950	1956	1955	1950
Fish:	..... (1,000 Lbs.).....			.....($1,000)		
Fresh or frozen	15,741	15,273	4,227	1,958	1,287	324
Canned	62,811	71,377	108,015	13,415	16,877	15,356
Cured	889	1,171	945	477	491	254
Other	293	250	64	135	121	27
Total	79,734	88,071	113,251	15,985	18,776	15,961
Shellfish:						
Fresh or frozen	3,354	3,443	2,169	2,186	1,986	953
Canned	18,755	17,759	5,735	4,682	3,946	1,655
Cured	74	477	469	86	215	287
Total	22,183	21,679	8,373	6,954	6,147	2,895
Total Edible Products	101,917	109,750	121,624	22,939	24,923	18,856
Fish and Fish-liver oil	140,804	142,671	75,974	12,883	11,852	7,137
Oysters & other shell for feed	69,276	70,372	62,000	523	464	441
Shell, unmanufactured	10,140	13,051	4,026	821	783	205

1/ PRELIMINARY

The Philippines took products valued at slightly over $8 million, largely canned California sardines valued at $4 million and canned California anchovies valued at about $2.5 million. Canned squid was another important export to the Philippines in 1956 with this trade valued at about $1 million. Trade with the Philippines was valued at $8.6 million during 1955 and $6.4 million in 1950. In 1950, the trade was principally in canned sardines.

West Germany, the principal market for United States fish oils, took directly products valued at $6.1 million during 1956, and is believed to be the ultimate destination for a large part of the exports of fish oils to the Netherlands valued at $4.4 million. In addition to fish oils, the West German market took salted salmon, fur-seal skins, pearl essence, and unmanufactured shells.

Table 2 - Value of United States Exports of Fishery Products, by Principal Country of Destination, 1950, 1955, and 1956

Country	1956 1/	1955	1950
	....	($1,000)	....
All Countries	39,480	39,977	27,462
Canada	7,990	10,038	3,042
Philippines	8,058	8,558	6,427
West Germany	6,118	1,905	883
Netherlands	4,956	7,196	4,347
United Kingdom	2,204	3,706	67
Norway	1,065	991	-
Belgium and Luxembourg	574	716	1,154
France	431	206	67

1/ PRELIMINARY

Aside from fish oils, the Netherlands was a relatively small but increasing market for frozen and canned salmon, and shrimp from the United States. Total trade with the Netherlands was valued at $4.9 million in 1956 as compared to $7.2 million in 1955 and $4.3 for 1950.

The United Kingdom took products valued at $2.2 million during 1956, a decline of 41 percent from the $3.7 million of 1955, due to the reduction in canned salmon imports. The United Kingdom was the principal United States market for frozen and canned fish in the prewar and wartime period. Since 1949, exports to this important market practically stopped due to restrictions on imports of fishery products from the United States resulting from balance-of-payments problems. It is believed that many fishery products could again be readily marketed in the United Kingdom if the restrictions on these imports from the United States were lifted.

Norway, normally considered a primary fish exporter, bought fish oils from the United States valued at $1 million during 1956. Belgium and Luxembourg purchased products valued at $574,000, a slight decline from $716,000 in 1955, and considerably below purchases in 1950 valued at $1,154,000. The main decline from 1950 was in exports of canned California sardines. Exports to France were valued at $431,000 as compared with $206,000 in 1955 and $67,000 in 1950, principally due to larger exports of frozen salmon.

Exports to Latin American countries have decreased since 1950 as a result of reduced shipments of canned California sardines. However, the area remains a very important market for canned fish. Exports to the Latin American area during 1956 were valued at $3.6 million.

Canned salmon, the most widely-distributed fishery commodity, was exported to 60 countries. Canned sardines went to 49 countries, canned tuna to 30, canned shrimp to 42, canned oysters to 15, canned crab to 11, and canned mackerel to 8 countries. Fish oils were exported to 22 countries, fur-seal skins to 11 countries, pearl essence to 19, and unmanufactured shell to 18. Mild-cured salmon went to 12 countries and dried shrimp to 11. Frozen salmon was exported to 16 countries and frozen shrimp to 28.

Exports of fresh and frozen fish and shellfish from the United States exports amounted to 19 million pounds during 1956, about three times the 1950 exports of over 6.4 million pounds. Of the 1956 total, about 90 percent was exported to Canada.

Exports of canned fish and shellfish in 1956 were considerably below those of 1950, due for the most part to reduced exports of canned California sardines. Canned shellfish exports have increased threefold both in quantity and in value since 1950. Canned salmon exports declined from 10.4 million pounds in 1955 to 5.2 million pounds in 1956 as a result of smaller shipments to Canada and the United Kingdom. The 1956 canned sardine exports dropped to 39.7 million pounds (due to a smaller supply of this fish in the United States), the bulk of which went to the Philippines along with about 15.6 million pounds of canned anchovies. The Latin American market was another important market for canned sardines and mackerel. Canned shrimp exports of 2.4 million pounds in 1956 went principally to Canada. Exports of canned squid (produced in California) totaled about 16 million pounds, of which the larger portion went to the Philippines and some quantities to Greece.

Exports of cured fish and shellfish totaled less than 1 million pounds in 1956, and have declined since 1950. Exports of mild-cured salmon increased while other products such as salted cod and haddock, and dried shrimp have decreased. Gains in mild-cured salmon resulted from increased shipments to Sweden and other Western European countries since 1950. A sharp decline in exports of dried shrimp to Cuba and Panama was responsible for the decline in exports of this product.

Exports of industrial fishery products from the United States were valued at $16.6 million during 1956, of which fish and whale oil made up $13 million. Also of significance in this field were exports of fur-seal skins, valued at $1.6 million, almost four times those of 1950. Exports of oyster and other shells for feed were valued at $523,000 in 1956, up somewhat from 1950 and 1955. Pearl-essence exports amounted to $355,000. Unmanufactured shells valued at $821,000 were exported during 1956, about four times the value of 1950, principally shipped to Japan (6.4 million pounds), Belgium (2.5 million pounds), and Canada (1.8 million pounds).

* * *

FOREIGN

International

NORTHWEST ATLANTIC FISHERIES COMMISSION

FISHERY SCIENTISTS MEET IN LISBON: A joint scientific meeting of fishery scientists, planned by the International Commission for the Northwest Atlantic Fisheries, the International Council for the Exploration of the Sea, and the Food and Agriculture Organization (FAO), was held in Lisbon, Portugal, from May 27 to June 3.

General principles in connection with fish population dynamics were deduced from the papers, with particular relevance to the cod, haddock, hake, ocean perch, and halibut fisheries.

There were three working parties at the meeting. The discussion on the effects of fishing dealt with the characteristics of fishing gear and methods, and the use of such gear, especially in connection with the magnitude and composition of catches.

It is hoped that the meeting will indicate what further research is needed in the North Atlantic (Trade News, March 1957.)

INTER-AMERICAN TROPICAL TUNA COMMISSION

SUOMELA APPOINTED U. S. COMMISSIONER: The President of the United States appointed Arnie J. Suomela, Commissioner of the United States Fish and Wildlife Service, U. S. Department of the Interior, to serve as United States Commissioner to the Inter-American Tropical Tuna Commission. The appointment became effective on May 14, 1957.

Aden

REVIEW OF THE FISHERIES: Fishing, perhaps Aden's oldest industry, is the one indigenous source of food in the Colony. The main catches are tuna, kingfish, caranx (a mackerel), sardines, and anchovies. In the last year fish production dropped considerably because of the absence of sardines, and consequently the larger fish, from the waters along the southern coast of Arabia. Sardine landings in 1956 were the lightest in six years.

There are now 21 mechanized fishing boats in the colony, and the supply of fresh fish was adequate in the last year. The Aden Fisheries Department estimated that during 1956 some 1,260 metric tons of fresh fish, valued wholesale at £63,700 (US$132,500), were landed in Aden for marketing. Some of the major types of fish supplied to local markets in 1956 are shown in the table.

Type	Quantity	Average Retail Price Per Pound	
	Metric Tons	E. African shilling	US¢
Mackerel . .	545	.47	6.6
Kingfish . . .	160	1.60	22.4
Tuna	70	1.25	17.5

Fish is salted or dried for export. In 1956 three fish meal plants were opened and began exporting fish meal. Fish is also imported from the Protectorate and Yemen and re-exported; the main export market for fish from Aden is still Ceylon. With the drop in fish production in the area last year, imports of fish into Aden from the Protectorate decreased in value (£3,000 or US$8,400 in 1956 as compared to £20,000 or US$56,000 in 1955).

Canada

BRITISH COLUMBIA HERRING CATCH FOR 1956/57 SEASON: The herring catch off the coast of British Columbia in the 1956/57 season totaled 179,943 metric tons, a decrease of 29 percent from the 253,396 metric tons reported for the 1955/56 season. The catch was also down from the average catch for the six-year period 1951-57 by about 10 percent.

British Columbia Herring Catch 1956/57 Season with Comparisons

Season Ending	Mar. 16, 1957	Mar. 10, 1956	Feb. 12, 1955	Mar. 27, 1954	Mar. 15, 1952	Mar. 17, 1951
	(Metric Tons)					
District No. 2:						
Northern	31,004	11,055	20,281	31,002	57,336	50,638
Central	36,213	50,084	27,613	32,607	39,911	51,314
Queen Charlotte Is.	29,089	92,637	21,625	28,440	11,182	3,138
District No. 3:						
Lower East Coast	43,389	48,978	51,130	53,050	40,308	41,003
Middle East Coast	20,001	30,156	25,740	20,087	10,369	12,073
Upper East Coast	15,045	951	9,529	6,326	8,242	3,773
West Coast	5,202	19,535	14,201	40,120	29,991	25,244
Total	179,943	253,396	170,119	211,632	197,339	187,183

The bulk of the herring landings was used for reduction into herring meal and oil. The production of products from the 1956/57 landings was as follows (previous season in parentheses): herring meal, 32,555 tons (47,000 tons); herring oil, 3.5 million imperial gallons (4.4 million). A total of 944 tons were sold for bait and 34 tons for fresh fish, according to a March 20 release from the Canadian Department of Fisheries.

* * * * *

CANADIAN INSPECTION STANDARDS FOR PLANTS PACKING FISHERY PRODUCTS FOR EXPORT: Uniform minimum standards for plants producing fish and shellfish products for export have been set by the Canadian Department of Fisheries, and a voluntary program of plant inspection is being instituted in British Columbia, effective May 1 of this year.

More than 60 representatives of the fishing industry, the provincial government, Vancouver city health authorities, and the fishermen's union met with the Deputy Minister of Fisheries and other Fisheries Department officials at a recent Vancouver meeting to consider minimum standards for fish-processing plants.

The minimum standards were drawn up by the technical branch of the Department's Inspection and Consumer Service following intensive research and investigation. In 1954, in cooperation with the fishing industry, the Department completed a coast to coast survey of more than 500 fresh, frozen, salt, and pickled fish plants which handle fish for inter-provincial and international trade. Data collected during this survey was used as a basis in establishing minimum plant standards.

A federal-provincial meeting was held in Ottawa shortly after completion of the survey, and the views of the ten provinces were expressed. General agreement was reached at that time on cooperative measures to bring about more effective inspection not only of fish products but also of fish plants and procedures.

The setting of minimum standards of construction, equipment, and sanitation of fish and shellfish plants is a further step in the advancement of the Department's over-all inspection program which is designed to maintain peak quality from the time fish are caught until they reach the consumer. (March 1957 Trade News of the Canadian Department of Fisheries.)

PACIFIC SALMON OFFSHORE FISHING REGULATIONS: Canadian fishermen will no longer be allowed to use nets to catch salmon in offshore waters of the Pacific Ocean, the Fisheries Minister announced recently.

This prohibition, as well as other amendments to the British Columbia Fishery Regulations, including a closed season and minimum size limit for troll-caught chinook salmon and a closed season for petrale sole, has been designed as a further conservation measure to protect important fish stocks of the Eastern Pacific Ocean.

Similar changes in fishery regulations of Alaska and of the States of Washington, Oregon, and California have either been effected or are expected to receive legislative approval at an early date.

Agreement on this joint action to coordinate fishery regulations in the Eastern Pacific area was reached at a conference held at Seattle, Wash., last February 27 and 28.

The recent growth of a salmon net fishery in offshore waters threatened existing United States and Canadian salmon conservation programs since the use of long series of nets in offshore waters intercepts the salmon before they separate to move in toward the rivers of their origin. Scientific fisheries management techniques can be applied most efficiently in inshore waters once the runs have separated to insure proper escapement to the spawning grounds.

It was agreed by Canadian and United States Authorities that absolute prohibition of all net fishing for salmon in the offshore waters of both countries was the only solution to this problem (Trade News, Canadian Department of Fisheries, March 1957).

German Federal Republic

SALTED SALMON IMPORTS PERMITTED: Import possibilities for salted salmon from the United States and Canada have been opened up by tender No. 302501 as published in the German Federal Bulletin of April 30, 1957.

Applications for import licenses under this tender may be submitted from May 3, 1957, onwards till the value limit has been reached, but not later than June 29, 1957, to the branch office of the Foreign Trade Agency in Hamburg.

Import procedure as well as regulations for tender No. 302501 are the same as for tender No. 302496 of February 21, 1957 (salmon, mild-cured), the value (about US$59,000) limit of which was exhausted on March 6, 1957.

Greece

THIRD FREEZER-TRAWLER PURCHASED FROM GERMANY: A Greek firm has purchased its third freezer-trawler from a Bremen shipyard. The vessel left Germany early in 1957 for Milan, Italy, where it will be equipped with refrigeration machinery. The vessel is designed to catch and freeze 300 metric tons of fish.

This new addition to the Greek fleet of high-seas trawlers brings the total of ships of this type to four (Alieia, March-April 1957).

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LOANS FOR FISHERIES: The Greek Government has announced that loans will be granted, payable in 8 years, to both the high-seas fisheries and the inland fisheries (*Alieia*, March-April 1957).

Japan

CRAB FACTORYSHIP OPERATIONS FOR 1957: The Japanese Government has granted licenses for 1957 to five North Pacific crab factoryship expeditions and has established a total production quota of 337,000 standard cases (48 $6\frac{1}{2}$-oz. cans) of king crab meat. In 1956, six fleets operated in the North Pacific and produced 427,350 cases of king crab meat.

The fishery in 1957 will be carried out in two major areas: the Okhotsk Sea off the west coast of Kamchatka Peninsula where four fleets will operate, and Bristol Bay where one fleet will operate. No fishing will be carried on in the Western Bering Sea this year as last year's operation were only exploratory and findings indicated that this area is not commercially profitable for king crabbing at this time. The fleet in this area produced only 54,500 cases of crab meat (mostly from king crabs), or 15,500 cases short of their target of 70,000 cases.

Japanese Crab Factoryship Expeditions and Production Quotas for 1957 and 1956

Area and Factoryship	Gross Tonnage	1957 Quota	1956 Pack
		(Cases--48 $6\frac{1}{2}$-oz. cans)	
Okhotsk Sea:			
Hakuyo Maru	6,372	70,000	73,500
Shiranesan Maru	5,736	70,000	73,500
Kaiyo Maru	4,963	70,000	73,500
Yoko Maru	5,763	70,000	92,500
Bristol Bay:			
Tokei Maru	4,514	57,000	59,850
Western Bering Sea:			
Shokyo Maru	5,886	-	54,500
Total cases		337,000	427,350

Details of the 1957 Japanese crab fleets and production quotas are given above together with the comparative figures for 1956.

Crab fishing in the Okhotsk Sea will be governed by the Japan-Soviet Fishing Convention signed in 1956. The Japanese industry feels that the provisions of this convention are not unduly restrictive and that this year's catch will not be adversely affected thereby. No quota has been established under the convention, the only restrictions being on female and immature crabs, and use of nets.

The standard export price for a case of king crab meat (48 $6\frac{1}{2}$-oz. cans) is US$24.15 f.o.b. Japan. The carryover from last year's pack is reported to be approximately 250,000 cases or about half of last year's production. The industry reports that the sales of canned crab meat in early April showed signs of increasing and there is some hope that the 1956 carryover will be greatly reduced by the time the 1957 pack comes on the market.

In addition to the factoryship-type operations, there will be some shore-based crab fishing from Hokkaido, and the total pack of king crab meat from all sources for 1957 is estimated at approximately 400,000 cases, some 20 percent less than the 1956 pack, an April 12 dispatch from the United States Embassy in Tokyo reports.

* * * * *

FISHERY PRODUCTS EXPORTED TO THE UNITED STATES, JANUARY-FEBRUARY 1957: Exports of fish and fish preparations to the United States in January 1957 totaled 5,948 metric tons (valued at US$3.6 million) and 8,969 tons in February (valued at US$4.3 million). Fish and fish preparations exports to the United States during January and February 1957 are shown in the table (U. S. Embassy in Tokyo, dispatch dated April 30, 1957).

Japanese Exports of Fish and Fish Preparations to the United States, January-February, 1957

	Quantity		Value	
	Jan. 1957	Feb. 1957	Jan. 1957	Feb. 1957
	.... (Metric Tons)		...... (US$1,000)	
Tuna, frozen	3,165	5,643	945	1,606
Tuna, canned	708	965	666	919
Crab meat, canned	155	143	358	329
Other canned fish	1,274	898	1,074	798
Unclassified	646	1,320	581	659
Total	5,948	8,969	3,624	4,311

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FISHERY PRODUCTS IN EUROPEAN MARKETS: When the United States market for canned bonito showed a strong downward trend in 1955 and thereafter, Peruvian fish exporters found solace in the expanding markets in Europe. Lately the Japanese have been shipping to European markets heavily, causing considerable concern to Peruvian suppliers, according to a May 14 report from Lima.

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JAPANESE FISHING VESSELS TO FISH OFF BRAZIL: One of the largest Japanese fishing companies plans to send 5 vessels to Brazil for fishing in Atlantic waters. The fleet will consist of 4 trawlers of about 100 tons each and 1 purse-seiner of 190 tons. Approximately 100 fishermen and crewmen will go to Brazil for the operation and a number of Brazilian trainees will be trained on the Japanese vessels.

This is an exploratory venture and the Brazilian Government has granted permission for two years. If the operation shows that commercially-profitable fishing can be carried on, the Japanese company hopes to conclude an agreement whereby a joint Brazilian-Japanese fishing company will be formed. If this comes about, the Japanese firm will participate financially in the building of freezing and processing installations, probably in the Santos area.

According to information obtained as a result of the explorations in 1956 by the Japanese vessel Toko Maru, there are corbina, merluza (hake or whiting), and shrimp available off Brazil, states a May 17, 1957, dispatch from the United States Embassy in Tokyo.

Mexico

CANNED MACKEREL MARKET: Mexico, like California, catches and cans both Pacific mackerel Pneumatophorus Diego (Macarela), and jack mackerel, Trachurus Symmetricus (charro, charito, or caballo). These fish are found along the West Coast of the Peninsula of Baja California. In 1956 four canneries in or near Ensenada, Baja California, and one cannery on Cedros Island, Baja California, packed an estimated 350,000 standard cases (48 15-ounce cans) from a catch of 24 million pounds of Pacific mackerel and 14 million pounds of jack mackerel. In Mexico no distinction is made between the pack of these two species; both are labeled "Macarela."

Of the canned fish consumed in Mexico, sardines rank first and mackerel second. In 1956, however, more mackerel than sardines were canned in Mexico. Mexican production of canned mackerel supplies all local demands and the producers claim they could produce more providing a market was available.

The plants that pack mackerel also can sardines, abalone, and occasionally anchovies and tuna. They also produce fish meal and oil from the offal and most have equipment for concentrating the stickwater. The largest cannery was destroyed by fire late in 1956 but was expected to be completely reconstructed, modernized, and operating sometime in June 1957. Another cannery, which will pack mackerel in addition to other fishery products, is scheduled for completion by the end of 1957. It will be located at San Roque, Baja California, about halfway down the west coast of the Peninsula.

The Mexican mackerel pack is put up in natural style in 15-oz. and 8-oz. tall cans and fillets in tomato sauce in 15-oz. oval cans. The usual technique consists of the fish passing through automatic cutters and eviscerators into brine tanks. After $1\frac{1}{2}$-2 hours in the brine the fish sections are packed in cans, exhausted, and drained, and either heated brine or heated tomato sauce added. The cans are then sealed and processed. The oval cans, to prevent off-shapes, are cooled under pressure in the retorts.

The 15-oz. tall and 15-oz. oval cans are packed 48 cans to the case. The 8-oz. tall cans run 72 to the case.

The consumption of canned mackerel is on the increase in Mexico. Mackerel fillets packed in tomato sauce in 15-oz. oval cans are becoming more popular. Canned mackerel, however, is in direct competition with locally-produced canned California sardines.

The 1956 pack of canned mackerel is estimated to have consisted of 40 percent 15-oz. tall natural, 45 percent of 15-oz. oval in tomato sauce, and 15 percent 8-oz. tall natural. The retail price in Mexico City for the 15-oz. tall can of mackerel is 2.85-2.90 pesos (about 23 U. S. cents); 15-oz. oval 2.85-3.00 pesos (23-24 cents), and 8-oz. tall 1.55-1.65 pesos (12-13 cents).

In 1956 only 1,228 pounds of canned mackerel, valued at US$497, were imported. Of these imports 889 pounds, valued at US$379, originated in the United States, while the remainder came from Japan and France.

Mexico will import very little or no canned mackerel in the near future. Mexico can produce all the mackerel required for her needs and could produce an exportable surplus if export markets were sufficiently profitable. The Mexican import duty of approximately 2 pesos a legal kilogram (7.3 U. S. cents a pound) plus 50 percent ad valorem is sufficiently high (about US$6.50 a case) to discourage competitive imports of canned mackerel. Wholesale prices in Mexico City in 5-case lots for the 15-oz. tall can of mackerel is 119.50 pesos (US$9.57) a case; 15-oz. oval in tomato 121.50 pesos (US$9.73); and 8-oz. tall 111.50 pesos (US$8.93) a case.

These prices are considerably under the estimated United States on-the-dock price plus the Mexican import duty.

Unless the Mexican import duty is lowered appreciably, which is highly improbable, there is little likelihood that there will be an increase in United States exports of canned mackerel to Mexico, states a May 7 dispatch from the United States Embassy in Mexico.

* * * * *

SHRIMP COOPERATIVE REQUESTS HIGHER EX-VESSEL PRICES: In a full-page advertisement published in a Mexico City newspaper (*Excelsior*) on April 10, 1957, the National Cooperative Confederation requested the President of Mexico for an increase in the ex-vessel prices paid for shrimp.

In an itemized accounting of costs made by the Sports Confederation and presented in the statement of the Cooperative Confederation, total costs for producing, processing, and exporting frozen shrimp from the west coast of Mexico is 13,400.25 pesos a metric ton (about 48.67 U. S. cents a pound). From other sources it appears that the estimates given by the cooperatives are too low. For the Guaymas area it is believed that average costs run about 8 U. S. cents a pound more than shown by the cooperatives and that for Mazatlan and Salina Cruz the costs are still higher.

Table 1 - Costs of Fishing for Shrimp on West Coast of Mexico

Item	U. S. ¢/Lb.
Boat expenses:	
Crew wages & shares	7.40
Food for crew	2.07
Coop. payments	2.83
Fuel & oil	3.76
Ice	2.70
Fishing gear	2.54
Repairs & maintenance	1.96
Depreciation	3.11
Insurance	3.11
Miscellaneous	1.01
Total boat expenses	30.49

Table 2 - Costs of Processing and Exporting Shrimp on West Coast of Mexico

Item	U. S. ¢/Lb.
Processing & exporting costs:	
Freezing & packing	7.63
Export taxes	2.48
Association dues	0.25
Custom fees	0.05
Freight	2.50
Commission on sales	5.25
Total processing & export costs	18.16
Total cost	48.67

Note: Values converted at the rate of 12.49 pesos equal US$1.00.

The costs, as given by the National Cooperative Federation, are shown in tables 1 and 2.

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SHRIMP FISHERY TRENDS, APRIL 1957: Due to the closed season for shrimp fishing on the west coast of Mexico, except for the Province of Salina Cruz, landings of shrimp on that coast were light, but compared favorably with the catch for the same month in 1956. Landings of shrimp at Gulf of Mexico ports continued to exceed the 1956 catches. The catch per boat in that area was lower, but the expanded fleet increases the amount landed.

The price dispute between the Mexican west coast cooperative fishermen and the boat owners was unsettled as of the end of April. It was believed that an agreement would be reached before the new West Coast season opened on May 16, states a May 10 dispatch from the United States Embassy at Mexico City.

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WEST COAST FISH CANNING INDUSTRY EXPANDING: The fish canning industry located on the west coast of Mexico is expanding rapidly, states an April 26 dispatch from the U. S. Embassy in Mexico City. In April the new tuna cannery at Guaymas, Sonora, was awaiting the arrival of its first load of tuna from a bait boat.

Reconstruction of the fish cannery at El Sauzal, Baja California, was well under way. This plant, which was destroyed by fire late in 1956, is scheduled to be completed some time in June 1957.

Drilling equipment, for obtaining fresh water, was landed at Point San Roque, Baja California (about 8 miles northwest of Asuncion Bay), where a large fish cannery is to be constructed. It is reported that this plant will be completed by the end of 1957 and it will be equipped to pack sardines, mackerel, tuna, and abalone.

Two other canneries, both for abalone, are projected for the west coast of Baja California. One for Santa Rosalia Bay (near the northern end of Sebastian Vizcaino Bay) and the other at San Juanico Bay (about 70 miles southeast of Abreojos Point).

The tuna cannery at Cabo San Lucas, Baja California, one of the oldest fish canneries in Mexico, is installing new packing equipment.

New Zealand

SPINY LOBSTER FISHERY: Catch and Exports: The catch of spiny lobster (Jasus lalandii) by New Zealand fishermen has risen from less than 1.0 million pounds in 1939 and about 3.0 million pounds in 1948 to 13.1 million pounds in 1955 (recovery of the tail portion is about one-third of the live weight).

In 1955 exports of spiny lobster tails (3.5 million pounds) amounted to 6.3 percent of the total New Zealand exports (practically all to the United States) and ranked third in value of all exports. In terms of value the exports of spiny lobster tails in 1955 amounted to US$2.5 million.

New Zealand's Catch and Exports of Spiny Lobsters, 1939, 1944, and 1946-55

Year	Catch	Exports	Year	Catch 1/	Exports 2/
	(1,000 Lbs.)			(1,000 Lbs.)	
1955	13,067	3,481	1949	4,224	715
1954	12,191	3,700	1948	2,992	418
1953	9,147	2,527	1947	2,022	-
1952	7,431	1,961	1946	1,887	-
1951	6,374	1,838	1944	1,783	-
1950	5,935	1,323	1939	915	47

1/ Whole spiny lobster.
2/ Chiefly tails (about 1/3 of the whole spiny lobster).

The catch in 1956 was estimated about the same as in 1955 or slightly higher. Exports declined in 1955 from 1954 due to a shortage of shipping space and consequently exports in 1956 were expected to exceed 1955, states a February 7 dispatch from the United States Embassy in Wellington.

Fishing Grounds: New Zealand spiny lobster are caught primarily off the South Island and chiefly in the sounds along the southwest coast. The chief port of landing is located at Bluff at the tip of the South Island. Over one half of the catch in 1955 was landed at Bluff. Thus, the expansion of the industry in the last ten years has been primarily in the southern part of the South Island where the spiny lobsters have been especially plentiful.

Fishing Methods: Spiny lobsters are caught: (1) by setting baited baskets or pots, (2) by trawling, and (3) by setting baited ring nets.

Independently-operated vessels fish under license from the Government. The issuance of licenses has been limited and less than the demand. In the south, the increase of export demand for spiny lobster has resulted in a shift to fishing for spiny lobster and as a result the catch of other fisheries in areas where spiny lobsters are plentiful has declined.

Preparation, Packing, and Marketing: A number of packing stations operate along the eastern part of the South Island, but especially at Bluff, Dunedin, and Christchurch. The plants are reported to be clean and the spiny lobsters are handled under sanitary conditions.

There are no government sanitary or inspection regulations in the spiny lobster industry, aside from the usual regulations governing food and factory operations. The widespread nature of the industry makes government inspection impractical.

The general packing procedure at the larger centers in the southern part of the South Island is for the boats to dress the spiny lobster at sea and freeze them in bulk on the ships. The tails are landed, thawed, and repacked at the centers in Dunedin and Bluff. At the smaller centers, the spiny lobsters are brought in alive and dressed at the packing plant. Regulations only permit "tailing" at sea in the southern region; elsewhere only whole spiny lobsters may be landed to avoid pollution of lobster tail beds and to assure sufficient landings to supply the New Zealand public

The private fishing operators usually sell their catch to the packing plants who in turn, after packing, ship the spiny lobsters to the United States to be sold there largely on a commission basis. The price received in the United States is watched very carefully.

The Pack: Most spiny lobsters are exported as frozen tails, but a small amount is shipped whole or canned.

The tails are packed in 20-pound wooden boxes, according to size, ranging from as high as 70 tails per 20-pound box for the smaller sizes, to only 15-20 for the jumbo size.

In preparing the pack, the tail is usually removed from the live carcass by hand. The sand vein is then removed from the tail, usually by means of a vacuum suction tube.

Packing Problems: Most spiny lobsters are dressed at sea and frozen in bulk on the ships. They are then thawed when they arrive at the packing plant in order to allow them to become flexible and suitable for packing in boxes. The thawing process creates a problem of quality deterioration resulting from raising the temperature of the frozen tails.

The problem of drip is also important and arises when fish that have been frozen and then thawed for repacking and refreezing release a drip with some corroding and staining characteristics. This liquid drips on the packing boxes and stains them a yellow color which is causing some concern to exporters and buyers. The New Zealand Department of Scientific and Industrial Research has been asked by the trade to assist in overcoming this problem of box staining. The Department has suggested that the boxes be sprayed with certain chemicals to eliminate the stain.

An alternative and probably preferable procedure would be to freeze the pack in final form on the ships and avoid thawing. However, it was pointed out that in several cases where fishermen did this, no price premiums were received in New York, despite the fact that the spiny lobsters were of high quality. The cost of operating on this basis is much greater because of the additional equipment needed on the vessels and the smaller catch that is possible with the greater space required on the vessels for packing operations.

Conservation Problems: The heavy export of spiny lobsters to the United States has been criticized as causing the depletion of stocks and raising retail prices to New Zealand consumers. Both subjects have even come up in Parliamentary debate. However, the criticisms are generally regarded as internal New Zealand problems.

With regard to raising prices to the New Zealand public, trade officials have observed that before the United States market developed, fishermen were getting low prices; now they are prosperous. Moreover, shipments to the United States are on the initiative of the New Zealand trade.

The depletion of stocks is reported as a serious problem and may readily be appreciated by noting the phenomenal use of the catch. One trade official noted that five years ago the bulk of his pack was jumbo size, i. e. 15-20 tails per 20-pound box. Today, the bulk is 40-50 or 58-70 per box with the distribution roughly as shown in table (sample taken January-March 1956).

Tails per 20-lb. Box	Percent
15-20	3.8
20-30	7.5
30-40	21.2
40-55	32.5
58-70	35.0

Thus the bulk of the pack is now of younger fish with smaller tails, because of the inroads of heavy fishing. Fishing beds formerly teeming with spiny lobsters are now becoming more difficult to find. If the process of intensive fishing continues, the catch may decline sharply.

A larger minimum size limit is advocated by some trade observers as a conservation measure. There is at present a minimum limit of ten inches and some observers advocate raising the limit to 11 or 12 inches.

The restricted licensing of fishing boats also limits the catch and serves as a conservation measure.

Although the size of spiny lobsters is diminishing, conservation officials are not concerned that stocks will be eliminated. Before this happens, the industry will become unprofitable and result in a reduction of fishing operations. Farsighted fishermen, however, do not wish to see the industry become uneconomic and would like to maintain conservation measures now to assure a long-term economic supply.

Norway

COD FISHERIES TRENDS, MARCH 30, 1957: Landings of spawning cod and Finnmark young cod as of March 30, 1957, amounted to 52,008 metric tons of which 17,379 tons were sold for drying, 26,178 tons for curing, and 8,451 tons as fresh fish. In addition, 1,970 tons of cod oil were produced; and 2,031 tons of cod roe were sold for curing and 979 tons for canning or as fresh roe. Last year during the same period the cod fisheries yielded 96,985 metric tons. Bad weather hampered the fishing this year to a great extent in the Lofoten area district, but south of that area the cod fishery was much better than usual in recent years, points out the Norwegian fishery periodical Fiskets Gang of April 14, 1957. The Lofoten cod fishing season gave disappointing results, and hopes were being pinned on the spring fishing for cod off Finnmark.

* * * * *

WINTER AND SPRING HERRING CATCH DOWN IN 1957: The winter and spring herring fisheries of Norway in 1957 produced 850,000 tons of winter herring (previously reported at about 786,250 tons) and 283,000 tons of spring herring--a total of 1,133,000 tons. In 1956 the winter catch amounted to 1,232,000 tons (reported to be 1,166,666 tons by Fiskets Gang, March 7, 1957) and the spring catch totaled 268,000 tons--a total of 1,500,000 tons. (News of Norway).

Peru

MARINE RESEARCH: Peru's marine research program conducted by the Peruvian Council of Hydrobiological Investigations will be directed by Dr. Warren S. Wooster, an oceanographer from the University of California's Scripps Institution of Oceanography. This appointment is the result of an agreement between the

Peruvian Council of Hydrobiological Investigations, the Scripps Institution, and the Inter-American Tropical Tuna Commission. Under the agreement, the Scripps Institution will train Peruvian oceanographers and will give leave of absence to staff members chosen to aid the Peruvian research studies. In return, the Institution will receive data collected in the Peruvian waters.

The Council is supported by four groups: the Peruvian Navy, the Guano Company (which harvests the rich fertilizer deposits left by sea birds on the rocky islands off the Peruvian coast), the Peruvian Fish and Wildlife Service, and the Peruvian fishing industry.

Financial support for the program comes from fees paid by United States tuna fishermen, who pay to collect bait in Peruvian waters and to use their ports.

Wooster's task will be to organize and direct the research program of the Council. His first project will be an oceanographic study of the northern boundary of the Peru Current, where tuna fishing is done. He will study how it varies in character and location from season to season.

One of his objectives will be to study "El Nino," a warm current from the north which occasionally sweeps down Peruvian coast and causes the death of many fish and birds.

Republic of the Philippines

CANNED FISH PRICES, APRIL AND MAY 1957: Wholesale and retail prices for canned sardines and canned salmon in Manila in April and May 1957 were as follows:

	Wholesale US$	Retail US$
Canned Sardines:	case (48 15-oz. cans)	can (15 oz.)
U. S. Brand	14.00-14.25	0.30-0.325
Japanese Brand .	11.50-11.75	0.225-0.25
Canned Salmon:	case (48 16-oz. cans)	can (16 oz.)
U. S. Brand	30.00	0.65-0.70
Japanese Brand .	30.375-30.50	0.675-0.725

Portugal

FIFTH NATIONAL FISHING CONGRESS: The Fifth Portuguese National Fishing Congress will be held at Luanda, Angola, September 27-October 7, 1957. This will be the first time that such a congress has been held outside continental Portugal. Luanda was selected as the site of this year's congress because Angola's fishing industry is most developed and important among the overseas territories.

The following subjects, among others, will be discussed at the Congress: the economic structure of the fishing industry, tendencies and prospects of fishing in Angola, markets and possibilities of expansion, and improving equipment of the fish meal industry with a view to increasing output and improving quality.

A Portuguese government official expressed the hope that as a result of discussions at this Congress there will emerge a foundation upon which a development plan for the fishing industry in the Overseas Provinces, similar to that in metropolitan Portugal, may be established.

Spain

VIGO FISHERIES TRENDS, MARCH 1957: Fishing: During March fishery landings at Vigo sold over the fish exchange amounted to about 10.7 million pounds, valued at US$1,029,000. The March catches represent an increase in quantity of about 62 percent as compared with the previous month and were about 20 percent over the March 1956 catch. The weather was more favorable for fishing operations during the month, especially for the smaller craft. No sardines were landed due to a closed season February 15-April 15.

The principal varieties of fish landed in March 1957 were: dollarfish 4.1 million pounds, small hake 2.5 million pounds; and horse mackerel, about one million pounds. The catch of dollarfish (known locally as pomfret) did not decline as expected in March.

The average price of fish and shellfish sold on the Vigo fish exchange in March was 9.5 U.S. cents a pound as compared with 11.3 U.S. cents in February and 8.1 U.S. cents in March 1956. The landings of shellfish sold on the exchange increased slightly in March to 221,965 pounds, an increase of 18 percent over the previous month.

Fish Canning: The fish canneries in the Vigo area purchased about one million pounds of fish during March; this is much higher than the purchases of about 88,164 pounds in February and the 262,430 pounds during March 1956. Although not more than 20 percent of the canneries were active in March, their production was unusually high. The principal varieties packed were anchovies, dollarfish, and squid. The anchovies were caught in the northern part of Spain and shipped in brine to Vigo canneries. Other species packed were horse mackerel and a type of bonito known locally as "tasarte" or "bonito marroqui."

Practically all canneries have been granted authorization to purchase olive oil and no difficulties are anticipated in obtaining an adequate supply. Tinplate continues to be scarce and apparently no action has been taken as yet by the Central Government on the estimated requirements of the fish canneries for the coming season.

Exports of canned fishery products were at a very low level during March, and were confined mainly to anchovy for Cuba, the United States, Netherlands, Germany, Switzerland, and Scandinavian countries. The canneries expect to be granted a higher rate of exchange on their exports of canned fishery products and this matter is pending before the Cabinet. They had asked for rates of 43-45 pesetas to the U.S. dollar except for anchovy. A rate of exchange of 53 pesetas to the U.S. dollar on exports of anchovy was requested because more hand labor is needed in packing. By the end of the month the principal canneries felt fairly certain that a rate of exchange of 42.00 pesetas (about 2.38 U.S. cents) to the dollar would be allowed on their exports.

No domestic prices had been fixed up to the end of March by the Government on canned fishery products sold in the country. Domestic markets were reported to be dull during March, but an improvement was expected in April.

U. S. S. R.

A NEW TECHNIQUE FOR ELECTRICAL FISHING: A new fishing technique makes use of the principle of electrotaxis--the tendency of fish, when placed in an electric current, to go from the negative pole, or cathode, to the positive pole, or anode. Electrotaxis may be used during all the seasons, independently of the condition of the fish. In addition, a weak alternating current agitates the fish and causes them to withdraw from the area. Thus, these phenomena may be used to more or less guide the fish.

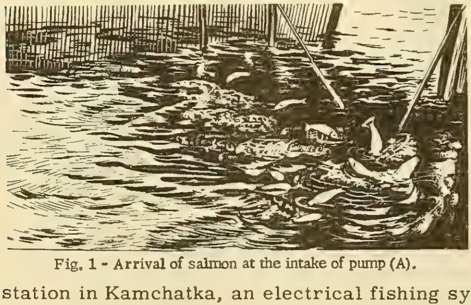
Fig. 1 - Arrival of salmon at the intake of pump (A).

After preliminary testing at the Ozerna River experimental station in Kamchatka, an electrical fishing system was installed in the Iavina River. This system caught 961 quintals (about 107,600 pounds) of fish in 169 hours as compared to 657 quintals (73,600 pounds) caught in the same time interval by a crew of fishermen using nets.

The end of an intake tube is wired to the positive pole of a direct-current high-voltage generator. Sheets of metal placed around the end of the intake tube are wired to the negative pole of the generator. The fish, guided by the existing electrical field, swim toward the near end of the intake tube. It might be thought that instinct would cause the fish to swim away from, rather than toward, the intake tube, but electrotaxis apparently overcomes the instinctual tendency of flight. The fish swim into the intake tube (fig. 1) and are, in a matter of seconds, drawn into the intermediate reservoir (fig. 2).

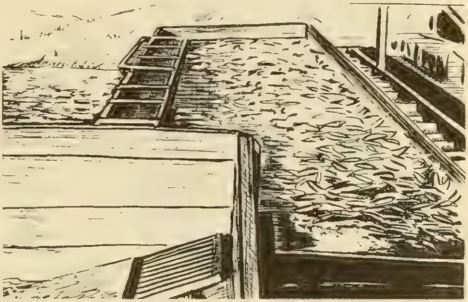
Fig. 2 - Fish which have been drawn into the reservoir.

Fish thus caught are, to all appearances, the same as before and apparently are not damaged. After being caught electrically, they have been kept alive for as much as five or six days.

For best results, the water should be made slightly saline and its resistence should measure between 1,000 and 10,000 ohms per centimeter. If the resistence measures above 10,000 ohms, the results are not too good. The electrical fishing system has no influence on fish at a distance greater than 3.5 meters (11.5 feet). This limitation has been made use of in that a certain number of fish are allowed to pass upstream, thus insuring adequate spawning.

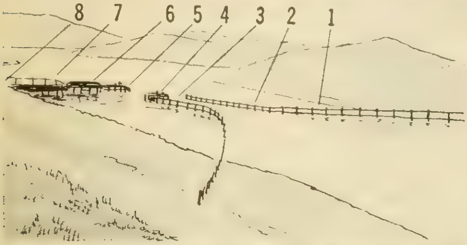

Fig. 3 - A view of the complete electrical fishing installation on the river. 1. barrier. 2. corridor. 3. passage for the fish. 4. service bridge. 5. fish pump. 6. intermediate reservoir. 7. cutting table. 8. conveyer belt.

The intake tube of the pump is 21 meters (almost 69 feet) long. The pump is large enough to engulf the fish. They pass from the pump through the intermediate reservoir and, finally--still drawn by the flow of water--they arrive at the cutting table. They are transported from here on a conveyer belt system to salting vats.

Experience has shown that fish caught electrically do not have grains of sand in their gills or under their scales as is the case when caught by net. Because of this, a portion of the fish are taken directly from the reservoir and are shipped by tank truck to a canning point six kilometers away.

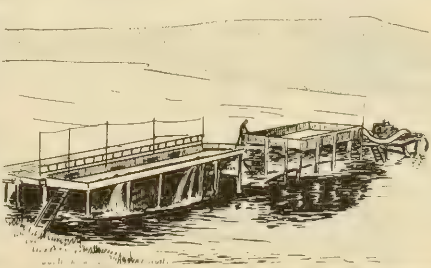
Fig. 4 - Fish pump, intermediate reservoir, and cutting table.

The entire fishing installation requires 40 to 45 kilowatts of current to run it, of which 6.5 kilowatts are used in the electrical fishing itself.

The river barrier is made up of metallic rods 7 to 8 millimeters (0.28-0.31 inch) in diameter, and 28 to 30 millimeters (1.1-1.2 inches) apart. These rods are set in wooden frames held by poles. Every fourth or fifth rod is charged with a weak alternating current. In spite of the comparatively great distance between the electrical rods, the fish don't approach the barrier.

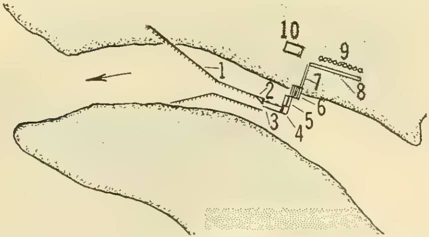

Fig. 5 - Plan of the electrical fishing installation on the Iavina River. 1. barrier. 2. service bridge. 3. passage for the fish. 4. fish pump. 5. intermediate reservoir. 6. cutting table. 7 and 8. conveyer belt. 9. pickling (brine) vats. 10. electrical power station.

As of now, the use of noise to guide the path of the fish has not been studied. It would be interesting to study the behavior of fish when subjected to sounds of varying frequencies. These sounds might be transmitted great distances through the water with relatively little dispersal. By this means, it might be possible to lead fish to the intake of a distant pump.

One of the advantages of electrical fishing is that young fish are not influenced by the electrical field; it takes a much stronger field current to affect them. Selective fishing can also be done electrically where only certain kinds of fish are taken. This possibility has been verified experimentally.

Note: Translated by R. Duckworth from La Peche Maritime, La Peche Fluviale et La Pisciculture of November 15 which in turn translated the article from the Russian periodical Rybno Khoziaistvo No. 2, 1956.

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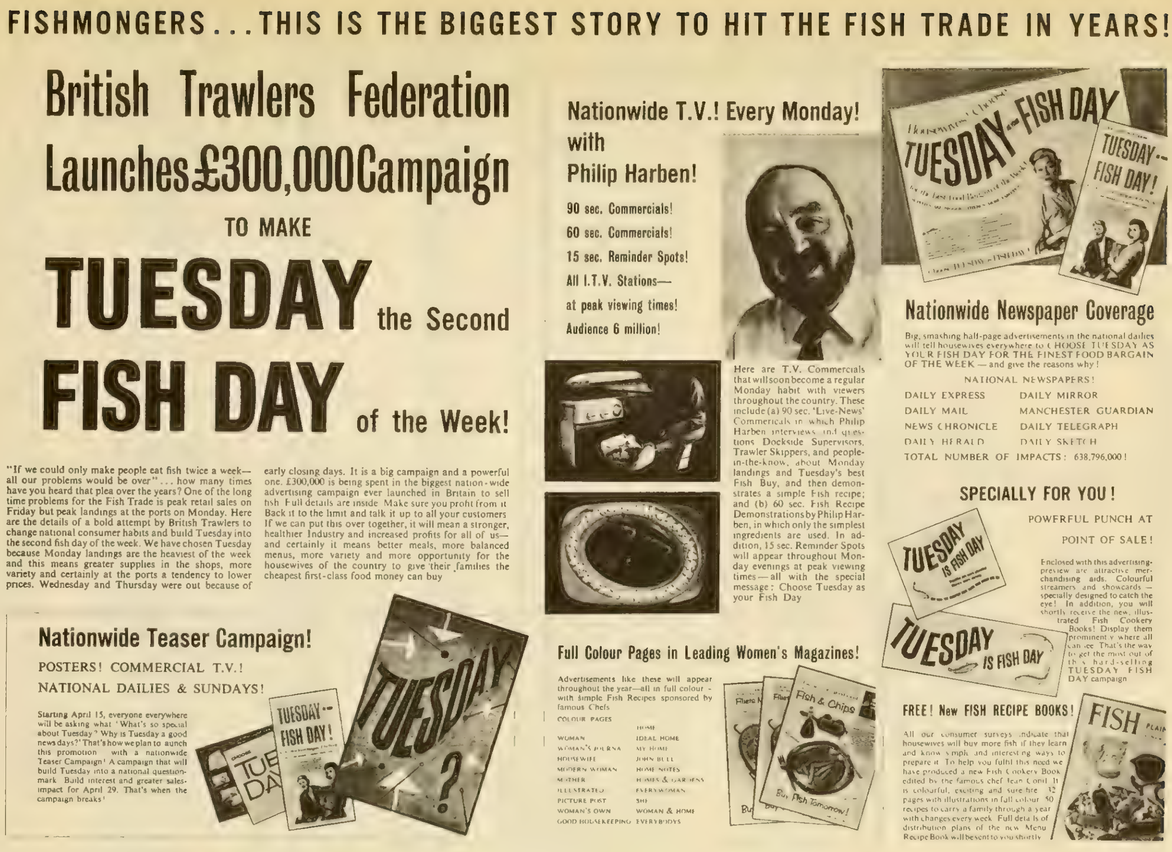
United Kingdom

ADVERTISING CAMPAIGN TO MAKE TUESDAY A SECOND FISH DAY: First details of a £300,000 (US$840,000) campaign by the British Trawlers' Federation and other sections of the fish trade to make Tuesday a second popular fish day of the week have been circulated. Responsible people in the trade have said if people could be encouraged to eat fish two days a week instead of one, the industry's problems would diminish.

In the past year, consultations have gone on between the Federation and fishmongers and fish friers through their national associations. They have decided that the time is ripe to face up to the issue, since landings are already going up and indicate that summer supplies will be heavy.

Posters and slogans, press and television campaigns, and color magazine advertisements are already planned to boost the idea of bringing Tuesday into line with Friday as an accepted fish day. A new color recipe book is being distributed to retailers and their customers. Television every Monday night will drive home the basic theme. The campaign was launched on April 29.

The reasoning behind the efforts of the British Trawlers Federation is based on two simple facts: (1) there are peak landings at the English ports on Monday which means that fish in the shops on Tuesday is in greater variety and more supply, certainly a benefit to the housewife; and (2) the national eating habit of the Sunday roast, cold on Monday, presents Tuesday as the ideal day for the first variation of the menu. Wednesday and Thursday were ruled out because of early closing days in most of the country.


TUESDAY—FISH DAY
TUESDAY—FISH DAY!
TUESDAY IS FISH DAY
TUESDAY IS FISH DAY
TUESDAY?
TUESDAY—FISH DAY!
Fish & Chips
Buy Fish Tomorrow!
FISH

FISHMONGERS...THIS IS THE BIGGEST STORY TO HIT THE FISH TRADE IN YEARS!

British Trawlers Federation

Launches £300,000 Campaign

TO MAKE

TUESDAY the Second

FISH DAY of the Week!

"If we could only make people eat fish twice a week—all our problems would be over" . . . how many times have you heard that plea over the years? One of the long time problems for the Fish Trade is peak retail sales on Friday but peak landings at the ports on Monday. Here are the details of a bold attempt by British Trawlers to change national consumer habits and build Tuesday into the second fish day of the week. We have chosen Tuesday because Monday landings are the heaviest of the week and this means greater supplies in the shops, more variety and certainly at the ports a tendency to lower prices. Wednesday and Thursday were out because of early closing days. It is a big campaign and a powerful one. £300,000 is being spent in the biggest nation-wide advertising campaign ever launched in Britain to sell fish Full details are inside Make sure you profit from it Back it to the limit and talk it up to all your customers If we can put this over together, it will mean a stronger, healthier Industry and increased profits for all of us—and certainly it means better meals, more balanced menus, more variety and more opportunity for the housewives of the country to give their families the cheapest first-class food money can buy

Nationwide Teaser Campaign!

POSTERS! COMMERCIAL T.V.!

NATIONAL DAILIES & SUNDAYS!

Starting April 15, everyone everywhere will be asking what 'What's so special about Tuesday? Why is Tuesday a good news days?' That's how we plan to launch this promotion with a nationwide Teaser Campaign! A campaign that will build Tuesday into a national question-mark Build interest and greater sales-impact for April 29. That's when the campaign breaks!

Nationwide T.V.! Every Monday!

with

Philip Harben!

90 sec. Commercials!

60 sec. Commercials!

15 sec. Reminder Spots!

All I.T.V. Stations—

at peak viewing times!

Audience 6 million!

Here are T.V. Commercials that will soon become a regular Monday habit with viewers throughout the country. These include (a) 90 sec. 'Live-News' Commercials in which Philip Harben interviews and questions Dockside Supervisors, Trawler Skippers, and people-in-the-know, about Monday landings and Tuesday's best Fish Buy, and then demonstrates a simple Fish recipe; and (b) 60 sec. Fish Recipe Demonstrations by Philip Harben, in which only the simplest ingredients are used. In addition, 15 sec. Reminder Spots will appear throughout Monday evenings at peak viewing times—all with the special message: Choose Tuesday as your Fish Day

Full Colour Pages in Leading Women's Magazines!

Advertisements like these will appear throughout the year—all in full colour - with simple Fish Recipes sponsored by famous Chefs

COLOUR PAGES

WOMAN
WOMAN'S JOURNAL
HOUSEWIFE
MODERN WOMAN
MOTHER
ILLUSTRATED
PICTURE POST
WOMAN'S OWN
GOOD HOUSEKEEPING

HOME
IDEAL HOME
MY HOME
JOHN BULL
HOME NOTES
HOMES & GARDENS
EVERYWOMAN
SHE
WOMAN & HOME
EVERYBODYS

Nationwide Newspaper Coverage

Big, smashing half-page advertisements in the national dailies will tell housewives everywhere to CHOOSE TUESDAY AS YOUR FISH DAY FOR THE FINEST FOOD BARGAIN OF THE WEEK — and give the reasons why!

NATIONAL NEWSPAPERS!

DAILY EXPRESS
DAILY MAIL
NEWS CHRONICLE
DAILY HERALD

DAILY MIRROR
MANCHESTER GUARDIAN
DAILY TELEGRAPH
DAILY SKETCH

TOTAL NUMBER OF IMPACTS: 638,796,000!

SPECIALLY FOR YOU!

POWERFUL PUNCH AT

POINT OF SALE!

Enclosed with this advertising-preview are attractive merchandising aids. Colourful streamers and showcards — specially designed to catch the eye! In addition, you will shortly receive the new, illustrated Fish Cookery Books! Display them prominently where all can see That's the way to get the most out of this hard-selling TUESDAY FISH DAY campaign

FREE! New FISH RECIPE BOOKS!

All our consumer surveys indicate that housewives will buy more fish if they learn and know simple and interesting ways to prepare it To help you fulfil this need we have produced a new Fish Cookery Book edited by the famous chef Jean Conil It is colourful, exciting and sure fire 32 pages with illustrations in full colour 50 recipes to carry a family through a year with changes every week Full details of distribution plans of the new Menu Recipe Book will be sent to you shortly

TYPICAL PAGE-SPREAD ADVERTISEMENT APPEARING IN BRITISH FISHING TRADE PERIODICALS IN ORDER TO PUBLICIZE WHAT IS BEING DONE TO PROMOTE TUESDAY AS THE SECOND FISH DAY OF THE WEEK.

The industry is not forgetting Friday, which starts off with a big national habit in its favor. They will be running television commercials Thursday nights to remind housewives of Friday fish bargains.

And back of this whole campaign will be running the standard theme that "fish is the cheapest first-class food money can buy." (Fishing News April 5, and Fish Trades Gazette April 27, 1957).

* * * * *

CANNED PILCHARD AND SILD SARDINE IMPORTS: During a Parliamentary Session on March 21, 1957, questions were raised as to the British imports of South African and Japanese canned pilchards and their affect on the Cornish pilchard industry. The recent trade agreement between the United Kingdom and Japan, which provides for imports of Japanese canned pilchards valued at £30,000 (US$84,000) for the year ending September 30, 1957, is causing concern in Cornwall. It was pointed out that imports from South-West Africa have increased substantially, but Japan's quota is very small and no imports have been received by Great Britain under the quota to date. Prior to the trade agreement with Japan, imports of canned Japanese pilchards were negligible (less than 50 tons yearly). Imports of canned pilchards from the Union of South Africa and South-West Africa reached a total of 12,185 long tons in 1956 (see table), states a March 25 dispatch from the United States Embassy in London.

Table 1 - British Imports of Canned Pilchards, 1952-56

Country	1956		1955		1954		1953		1952	
	Tons	US$ 1,000	Tons	US$ 1,000	Tons	US$ 1,000	Tons	US$ 1,000	Tons	US$ 1,000
Union of South Africa	991	378	2,453	916	1,069	431	2,048	916	4,894	2,117
South-West Africa	11,194	4,231	6,235	2,240	2,952	1,047	655	286	745	344
Other	-	-	2	-	1	-	1	-	42	39
Total	12,185	4,609	8,690	3,156	4,022	1,478	2,704	1,202	5,681	2,500

It was announced in a British newspaper on March 25 that a trial barter agreement had been made with Norway whereby 50,000 cases of Norwegian sild sardines valued at £150,000 (US$420,000) have been imported by a British automobile manufacturer.

* * * * *

FROZEN SHRIMP PACKED IN TRANSPARENT PLASTIC CONTAINER: Frozen shrimp packed in containers of two different sizes made of transparent sheet plastic have been introduced by a British firm in England. The shrimp are packed for the firm in Norway.

One size container is a consumer pack shaped like a sardine can, and the other size container is drum shape for the institutional pack. Both containers have flat lids, sealed on by heat and pressure, which are removed by cutting off the projecting flange with scissors or by piercing one corner of the lid with a knife and tearing it open, reports the May 1957 issue of the Canadian Fisherman. (Editor's note: It is believed that the pack consists of frozen cooked shrimp.)

* * * * *

UNDERWATER TELEVISION TO AID HERRING RESEARCH: For the first time an industrial underwater television camera is being used aboard the Scottish fishery research vessel Clupea, scheduled to sail from Ayr to search sea and sandbanks in the eastern area of the lower Clyde estuary.

The herring, which once abounded in the firth, are the subject of investigation being carried out by scientific officers of the Scottish Home Department Marine Laboratory.

Their object is to gauge the extent and scope of the spawning areas, environmental features, dispersal of the herring larvae, and their subsequent growth or mortality.

The underwater television set is being used to provide a detailed study of distribution and density of egg concentrations on the spawning grounds, and some excellent photographs of the sea bed, down to a depth of 30 fathoms, have been obtained.

In the past the principal research of this nature has been done in the North Sea fishing grounds, but the Clyde estuary into which the *Clupea* makes daily trips, provides scope for more precise work, as the spawning grounds are more localized.

The cable carrying the power to the underwater camera is the type used by the Admiralty in locating the crashed Comet airliner off the Italian coast some years ago. (*Fish Trades Gazette*, April 20, 1957.)

◆

OREGON FISH TAGS WIND UP IN PARIS CAFE

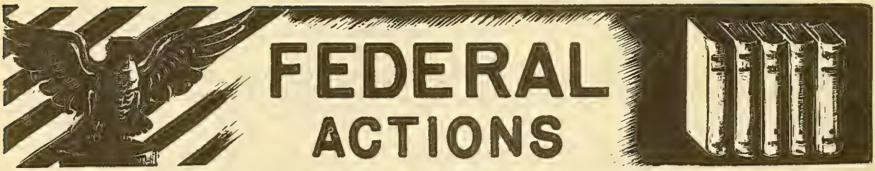
The Oregon Fish Commission is positive of the final disposition of at least two steelhead salmon that entered the Columbia River in 1956, the Commission announced in June 1957.

The fish were "tagged" by the Commission at Bonneville Dam in July 1956 and were released to continue their trip to the spawning grounds. But these two particular fish failed to reach their intended destination.

This month, the numbered plastic discs that had been attached to the fish at Bonneville were returned to the Commission, accompanied by a letter written in French. A translation of the letter disclosed that the tags had been removed from the fish by a Roumanian dishwasher at the La Reine Pedauque, an exclusive Paris restaurant.

The Commission points out that the tagged steelhead salmon were probably among the last fish taken commercially by Indians at Celilo Falls. Completion of the Dalles Dam last winter flooded out historic fishing sites at Celilo.

The translator said he had a little difficulty translating the letter because the dishwasher had used phonetic French spelling in his letter. The name of the writer was illegible, but his curious final passage was clear: "I hope this information helps you to cure these fish of their polygamy and the cruelty of gobbling one another."



FEDERAL ACTIONS

Department of the Interior

FISH AND WILDLIFE SERVICE

ALASKA WALRUS HUNTING REGULATIONS:

Regulations to permit the revival of walrus trophy hunting off the coast of Alaska and promote the native economy by permitting the export of walrus hides by natives have been issued by the Department of the Interior, Assistant Secretary Ross L. Leffler announced May 15.

The regulations were issued under authority granted in legislation passed June 29, 1956, amending an act of 1941 which limited the harvest of the walrus in Alaska. At the time the legislation was being considered in 1956 it was reported that the walrus population has been stable for many years and since the walrus is a polygamous animal, regulated hunting of bulls would not endanger the resource.

Walruses are large marine mammals of subpolar distribution and originally were abundant throughout the Bering Sea region. During the early days of whaling from 1840 to 1890, walruses were hunted ruthlessly. From 12,000 to 15,000 animals were killed annually--far more than the reproductive rate could replace.

The regulations issued by the Department permit walrus hunting and allow the hunter to bring back the head and the hide, but he must donate the meat to the inhabitants of the native village nearest the point of kill for use as food.

The conditions which govern walrus hunting for trophy purposes in 1957 are as follows: The hunting season will extend from May 15 to August 15 and is limited to territorial waters of the Bering Sea, the Chukchi Sea, and the Arctic Ocean north of 59° N. latitude. Walruses may be taken as trophies in this area only by the use of a rifle not smaller than a .30 caliber, and no airplane or helicopter may be used in the taking. An airplane or helicopter, however, may be used to transport a hunter between a settlement or point of outfitting and a native village or other initial point from which a walrus hunt is to start.

A non-native hunter must employ and be accompanied by a native guide when taking a walrus. A payment of a license fee of $25 is required of non-native residents of the Territory and a fee of $50 is required if the applicant is not a resident. Natives are exempt from the license requirement.

As in past years, walruses may be taken by natives at any time for food and clothing for themselves and by miners, explorers, or any other persons when in need of food and no other food is available. Under the regulations issued by the Department, it will now be possible to export from Alaska the hides from walruses taken for these purposes.

The hide of a mature walrus, used primarily in industry for buffing wheels to polish silver, is expected to yield from $100 to $120 in the light of the average weights of such hides. A firm export market for approximately 200 mature walrus hides each year exists through a commitment made by a firm in Portland, Ore. Assistant Secretary Leffler said the sale and exportation of mature walrus hides should materially enhance the native economy.

The regulations as they appeared in the May 14 Federal Register follow:

TITLE 50—WILDLIFE

Chapter I—Fish and Wildlife Service, Department of the Interior

Subchapter E—Alaska Wildlife Protection

PART 47—PROTECTION OF WALRUSES

Basis and purpose. By an act approved on June 29, 1956 (70 Stat. 372), the prior existing restrictions imposed by the act of August 18, 1941 (55 Stat. 632; 48 U. S. C. 248), on the sale and exportation of parts of walruses lawfully taken in the Territory of Alaska by natives for food and clothing for themselves and by miners or explorers or any other person when in need of food were relaxed to the extent that the hides of walruses so taken may be sold and exported under regulations to be prescribed by the Secretary of the Interior. The amendatory act cited also authorizes the Secretary of the Interior to prescribe regulations under which walruses may be taken by natives and nonnatives for purposes other than food and clothing.

To implement the Walrus Protection Act, as amended, the following regulations, constituting a new Part 47—Protection of Walruses, are hereby adopted:

DEFINITIONS

Sec.
47.1 Meaning of terms.

FOOD, CLOTHING AND EMERGENCY USES

47.5 General provisions.

WALRUS HUNTING

47.10 General provisions.
47.11 Open season.
47.12 Areas open to walrus hunting.
47.13 Methods and means of taking.
47.14 Guide requirement.
47.15 Utilization, possession and exportation of walruses.

LICENSES

Sec.
47.20 General provisions.
47.21 License applications.
47.22 Exemptions.

SCIENTIFIC PERMITS

47.25 General provisions.
47.26 Permit applications.
47.27 Carrying and exhibiting.

AUTHORITY: §§ 47.1 to 47.27 issued under sec. 1, 55 Stat. 632, as amended; 48 U. S. C. 248.

DEFINITIONS

§ 47.1 *Meaning of terms.* For the purposes of this part, the following terms shall be construed, respectively, to mean and to include:

(a) *Territory.* Territory of Alaska.

(b) *Secretary.* The Secretary of the Interior or his authorized representative.

(c) *Person.* Individual, association, partnership or corporation.

(d) *Native.* Eskimo, Aleut or other aborigine of one-half or more Eskimo, Aleut or other oboriginal blood.

(e) *Nonnative.* Any person not of one-half or more Eskimo, Aleut, or other aboriginal blood.

(f) *Take.* Pursue, hunt, shoot, wound, kill, capture, trap or wilfully molest or disturb.

(g) *Open season.* The time during which walruses may lawfully be taken. Each period of time prescribed as an open season shall be construed to include the first and last days thereof.

(h) *Export.* Transportation or offering for transportation by any means from the Territory to any place outside the Territory.

FOOD, CLOTHING AND EMERGENCY USES

§ 47.5 *General provisions*—(a) *Taking and utilization.* Walruses may be taken at any time and by any means by natives for food and clothing for themselves and by miners or explorers or any other person when in need of food and other food is not available, and the hides or ivory of walruses so taken may be possessed, purchased, sold, bartered, transported within and exported from the Territory, at any time, subject to the conditions and restrictions specified in this section.

(b) *Possession and sale within the Territory.* The hides or ivory of walruses taken in conformity with paragraph (a) of this section may be possessed, purchased, sold, bartered and transported within the Territory by any person at any time.

(c) *Exportation of ivory.* Ivory from walruses taken in conformity with paragraph (a) of this section may be exported only when manufactured or processed in the Territory by carving, drilling, cutting or engraving to such extent as materially to alter its original form and surface.

(d) *Exportation of hides.* Any person at any time may export, without limitation on numbers or sizes of such hides, the hides of walruses taken in conformity with paragraph (a) of this section after first procuring an export permit obtainable without charge upon application to the Administrator, Alaska Wildlife Resources, Juneau, Alaska, or upon application to any game management agent or other officer designated by the said Administrator.

(e) *Marking of packages.* No package containing the hides of walruses subject to exportation under this section shall be exported unless it is clearly and conspicuously marked, labeled, or tagged on the outside thereof to show the names and addresses of the consignor and consignee, the contents of the package, and the number of the export permit required by paragraph (d) of this section.

WALRUS HUNTING

§ 47.10 *General provisions.* During the open season, by the methods and means, and in the areas open to walrus hunting as specified in this part any person may take (without regard to the food and clothing purposes required by § 47.5) one bull walrus per year. Such walrus or parts thereof so taken may not be purchased, sold or bartered but they may be utilized, possessed, or transported within and exported from the Territory, at any time, subject to the conditions and restrictions prescribed by the succeeding sections of this part.

§ 47.11 *Open season.* May 15 to August 15 (dates inclusive).

§ 47.12 *Areas open to walrus hunting.* Territorial waters of the Bering Sea, the Chukchi Sea, and the Arctic Ocean North of 59° N. Latitude.

§ 47.13 *Methods and means of taking.* Walruses may be taken for other than food and clothing purposes only by the use of a rifle not smaller than .30 caliber and no airplane or helicopter shall be used in any manner in the taking of walruses: *Provided*, That nothing in this section shall prohibit the use of an airplane or helicopter as a means of transportation between a settlement or point of outfitting and a native village or other initial point from which a walrus hunt is to be conducted.

§ 47.14 *Guide requirement.* Any nonnative taking a walrus pursuant to § 47.10 must employ as a guide, a native residing in the vicinity of the hunting area and be accompanied by such guide at the time of such taking.

§ 47.15 *Utilization, possession and exportation of walruses.* The meat of any walrus taken by a nonnative pursuant to § 47.10 shall be delivered without charge to natives residing nearest the hunting area for use as food. The remaining parts of any walrus so taken may not be purchased, sold or bartered but such parts may be possessed, transported within and exported from the Territory subject to the conditions and restrictions specified in this section.

(a) *Possession and transportation.* Parts of any walrus taken pursuant to § 47.10 (other than the meat which may be possessed and used only by natives for food) may be possessed and transported within the Territory by any person at any time: *Provided*, That any person possessing or transporting parts of any walrus not legally taken by himself shall furnish upon request of any person authorized to enforce this part a statement relating the manner in which acquired or the name, license number and address of the person from whom such parts were obtained.

(b) *Exportation of parts of walruses.* Any person at any time may export parts (other than the meat) of walruses taken pursuant to § 47.10 after first procuring an export permit obtainable without charge upon application to the Administrator, Alaska Wildlife Resources, Juneau, Alaska, or upon application to any game management agent or other officer designated by the said Administrator.

(c) *Marking of packages.* No package containing any parts of walruses subject to exportation under this section shall be exported unless it is clearly and conspicuously marked, labled, or tagged on the outside thereof to show the names and addresses of the consignor and consignee, the contents of the package, and the number of the export permit required by paragraph (b) of this section.

LICENSES

§ 47.20 *General provisions.* Except as permitted by § 47.5, no non-native shall take any walrus unless at the time of such taking he carries on his person a valid license as required by the Walrus Act of August 18, 1941, as amended by the act of June 29, 1956 (48 U. S. C. 248). Each such license shall bear the signature of the licensee written in ink on the face thereof and such license shall be produced for inspection upon request by any game management agent or other authorized person requesting to see it.

§ 47.21 *License applications.* Each application for a license shall be made on a form furnished by the U. S. Fish and Wildlife Service and shall be accompanied by a fee of $25 if the applicant is a nonnative resident of the Territory (as defined in section 3 of the Alaska Game Law of January 13, 1925, as amended; 48 U. S. C. 207) and a fee of $50 if the applicant is a nonresident. If the application is made by mail it shall be accompanied by a bank draft or an express or postal money order payable to the U. S. Fish and Wildlife Service for the amount of the license fee.

§ 47.22 *Exemptions.* No license shall be required of a native nor of any person taking a walrus for scientific or educational purposes in accordance with a permit issued pursuant to this part.

SCIENTIFIC PERMITS

§ 47.25 *General provisions.* Permits for the taking, possession and exportation of walruses or parts thereof for scientific or educational purposes will be issued by the Secretary upon such terms and conditions as are consistent with the protection and conservation of the walrus herds.

§ 47.26 *Permit applications.* Applications for permits to take, possess or export walruses or parts thereof for scientific or educational purposes should be addressed to the Administrator, Alaska Wildlife Resources, Juneau, Alaska.

§ 47.27 *Carrying and exhibiting.* Any permit issued pursuant to § 47.25 shall be carried by the permittee when taking walruses and shall be exhibited to any game management agent or other authorized person requesting to see it.

Since the foregoing regulations relieve existing restrictions applicable to the taking and utilization of walruses and parts thereof, notice and public procedure thereon are not required and they shall become effective upon publication in the FEDERAL REGISTER (5 U. S. C. 1001, et seq.)

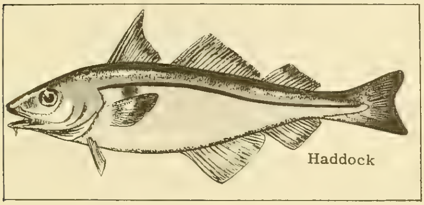
Issued at Washington, D. C., and dated May 10, 1957.

HATFIELD CHILSON,
Acting Secretary of the Interior.

* * * * *

PROPOSED NET MESH REGULATIONS FOR NORTHWEST ATLANTIC HADDOCK AND COD FISHERIES:

Notice of proposed changes in net mesh regulations for trawl fishermen operating off the New England coast were carried in the Federal Register of May 30.


Haddock

The regulations apply to what is officially known as Subarea 5. Interested parties had 30 days in which to comment on the proposed changes.

Under existing regulations haddock fishermen must use nets with mesh no smaller than 4½ inches, but fishermen seeking other species who incidentally catch some haddock have in the past been exempt from the net regulations up to 5,000 pounds or 10 percent of the total catch per trip. Under the proposed regulations this exemption would be continued but the fishermen would have the alternative of operating under a new exemption which would allow them to take haddock not exceeding 10 percent of all trawl-caught fish taken during any one year.

It is also proposed to require cod fishermen to use nets with mesh no smaller than 4½-inches. The same exemption rules will apply to those who take cod incidentally with other catches.

These proposed changes have been recommended by the International Commission for the Northwest Atlantic Fisheries. The net mesh regulations are for conservation purposes to permit the escape of small haddock and cod for possible capture later when they are of a more profitable size.

The proposed amendments to the existing regulations (which first entered into force in 1953) deal with three subjects: (1) the species of fish involved; (2) the gear to be regulated; and (3) exemptions from the regulations. Each of the proposed amendments is discussed below in relation to the pertinent section of the existing regulations (Title 50, Code of Federal Regulations, Part 155).

I. Species of Fish Involved: The regulations now in force govern only the taking of haddock in the regulatory area described in §155.1 (a). It is proposed to amend the regulations so as to make them applicable to fishing for both haddock and cod. Under the regulations now in force (§155.2) before a person may take haddock in the regulatory area or possess on board a vessel haddock taken in the regulatory area in quantities in excess of 5,000 pounds or 10 percent of all the fish on board the vessel, a person must obtain a registration certificate from the Fish and Wildlife Service. Under the proposed new regulation a person would be required to obtain such a registration certificate before taking cod or haddock in the regulatory area, or possess either cod or haddock taken in the regulatory area in the specified quantities. The regulatory area would not be changed. The procedure for obtaining registration certificates would not be changed.

II. Gear to be Regulated: (a) Mesh sizes: Under the regulations now in force, if a haddock registration certificate has been issued for a vessel, and the certificate is in force the fisherman may not possess on board the vessel a trawl net or nets, parts of nets or netting having a mesh size less than 4.5 inches as determined in accordance with paragraphs (b), (c), and (d) or §155.3. Under the new regulation, if a registration certificate has been issued for a vessel and the certificate is in force, the fisherman would not be permitted to possess on board the vessel a trawl net or nets, parts of nets or netting made of manila twine having a mesh size less than 4.5 inches as determined under paragraphs (b), (c), and (d) of §155.3 or a trawl net or nets, parts of nets or netting made of material other than manila twine, unless the net or nets, parts of netting has a selectivity equivalent to that of a 4.5-inch manila trawl net.

The Fish and Wildlife Service has tested the behavior in use of cod ends constructed of the cotton twine most commonly used, as well as cod ends constructed of several types of nylon. Through these tests it has been possible to determine with sufficient accuracy the dry-before-use mesh size for cod ends made of 120-thread cotton and for two types of nylon which have a selectivity equivalent to the selectivity of 4.5-inch manila cod ends. These dry-before-use mesh sizes are contained in the table in paragraph (d) of §155.3 and the Service, following previous practice, will certify cod ends of these types which have the specified dry-before-use mesh size. Section 155.3 (g) provides that cod ends constructed of twines other than manila and which do not qualify for certification under §155.3 (d) shall be considered to have a selectivity equivalent to that of 4.5-inch manila if they are not less than 4.5 inches wet after use when measured in accordance with paragraphs (b) and (c) of §155.3.

The proposed changes relating to fishing gear will not affect persons who continue to use cod ends made of manila twine and any such person may continue to follow the procedure prescribed in the regulations now in force. The proposed changes would affect only those persons who would use cod ends made of twine other than manila. If a person desired to use cod ends of 120-thread cotton or No. 1,000 braided nylon cargo netting, single strand, 43 yards per pound, or No. 400-550 braided nylon parachute cord, single strand, he could have them certified when dry before use under §155.3 (d) if they met the prescribed standards of measurement, i. e., 4.250 inches, 4.875 inches, and 4.750 inches, respectively. If a person did not wish to have them certified, or if they did not meet the prescribed standards of measurement, cod ends made of the materials mentioned could still be used if they were 4.5 inches or larger wet after use when measured in accordance with paragraphs (b) and (c) of §155.3. Certification would not be provided for cod ends made of twines other than those specified in the table in §155.3 (d). A person could use twines other than manila and not listed in §155.3 as this section would be revised provided that they were not less than 4.5 inches wet after use when measured in accordance with §155.3 (b) and (c).

(b) Chafing gear: Under the present regulations, chafing gear may be attached to the underside only of the cod end alone to reduce and prevent damage thereto. Under the new regulations, any person would be permitted to attach a single piece of netting to the upper side of the cod end provided that it met the conditions regarding mesh size, length, and method of fastening specified in §155.3 (h).

III. Exemptions: (a) The trip exemption. Under the regulations now in force (§155.5 (a)) a person is not required to register his vessel for haddock fishing or to use the so-called large mesh if, in the course of fishing for fish other than haddock, he at no time takes or possesses on board the vessel quantities of haddock in excess of 5,000 pounds or 10 percent of all the fish on board, whichever is the greater. This exemption has become known as the "trip exemption." Under the new regulations which involve both cod and haddock, this exemption would be continued. Thus, under the new regulations a person would not be required to register a vessel or to use the so-called large mesh if, in the course of fishing for fish other than cod or haddock, he at no time took or possessed on board the vessel quantities of haddock in excess of 5,000 pounds or 10 percent of all the fish on board, whichever is the greater, and quantities of cod in excess of 5,000 pounds or 10 percent of all the fish on board, whichever is the greater. A person might have on board 10,000 pounds of haddock and cod combined, but not more than 5,000 pounds of either species. Twenty percent of the fish on board may be cod and haddock combined, but no more than half of the 20 percent may be haddock, nor more than half cod.

(b) The annual exemption. The new regulations would provide for a new exemption, one that has been generally referred to as the "ten-percent annual exemption." Under this provision, a person would not be required to register his vessel for haddock or cod fishing, or to use the so-called large mesh, if, in any period of 12 months, while fishing for species other than haddock or cod, he did not take haddock or cod in quantities in excess of 10 percent each of all the trawl-caught fish taken during the same 12 months, even though in any trip, the haddock or the cod taken might exceed 10 percent of all the fish caught during that trip. The haddock and cod combined could total 20 percent of all the trawl-caught fish taken in any 12-month period, but not more than half of the 20 percent could be haddock, not more than half could be cod.

In order to take advantage of this exemption, a person would apply to the Regional Director of the Fish and Wildlife Service in Boston, Mass. Forms for making application would be provided. With the completed application form a person would submit a certified correct listing by weight, species, and month in which caught, of all the fish caught by the vessel for which the exemption is desired during the 12-month period immediately preceding the date of application. An exemption certificate would then be issued which would be valid for a period of 12 months. During that period, the operator would be required to submit to the Regional Director, after each trip, a certified correct statement listing separately by species and weight, the total quantities of all fish sold or delivered. If during the 12-month period for which the exemption certificate was issued, the vessel were used to take more than the allowable quantities of cod and haddock, the operator would not be eligible to receive a renewal of the certificate when it expired.

If an exemption certificate were issued for a vessel, and the fisherman desired to change operations and fish primarily for haddock or cod in the regulatory area, the fisherman might do so but he would be required first to obtain a haddock-cod registration certificate and comply with the terms of the certificate and §155.3 of the regulations, including the requirement that he use large-mesh fishing gear. Haddock or cod taken under the registration certificate would not be counted in computing the ratio of haddock or cod to trawl-caught fish taken during the 12-month period covered by the annual exemption feature.

The regulations as they appeared in the May 30 Federal Register follow:

Fish and Wildlife Service

[50 CFR Part 155]

NORTHWEST ATLANTIC COMMERCIAL FISHERIES; HADDOCK AND COD PROVISIONS

NOTICE OF PROPOSED RULE MAKING

At its Fifth Annual Meeting held in Ottawa, Canada, June 6–11, 1955, the International Commission for the Northwest Atlantic Fisheries, a body created pursuant to Article II of the International Convention for the Northwest Atlantic Fisheries signed at Washington, D. C., under date of February 8, 1949, adopted a proposal amending a proposal previously adopted by the Commission in which it had been recommended that the Contracting Governments take appropriate action to prohibit the taking of haddock in Sub-area 5 of the Convention Area with a trawl net having a mesh size of less than four and one-half inches.

Under the terms of the proposal adopted at its Fifth Annual Meeting the Commission's earlier proposal was so amended as to recommend that all Contracting Governments prohibit the taking of cod, as well as haddock, in Sub-area 5 of the Convention Area with a trawl net having a mesh size of less than four and one-half inches. In the amended proposal the restrictions on the mesh size of a net are stated in terms of a trawl net construction of manila twine, with the provision that when trawl nets other than manila are used they shall have a selectivity equivalent to that of a four and one-half inch manila trawl net. The amended proposal also modified the Commission's previously adopted recommendation that all Contracting Governments restrict the nature and extent of the protective covering (chafing gear) which might be used to reduce and prevent damage to trawl nets used in taking haddock and cod.

At all times since the initial adoption by the International Commission for the Northwest Atlantic Fisheries at its meeting held in St. Andrews, New Brunswick, Canada, June 30–July 9, 1952, of a proposal recommending a mesh size restriction for the taking of haddock in Sub-area 5, the Commission's proposals have limited the exemptions to the restriction to persons taking haddock for the purposes of scientific investigation or to persons having in possession on board a vessel haddock in amounts less than five thousand pounds or ten percent by weight of all fish on board such vessel, whichever is larger. At its Sixth Annual Meeting held in Halifax, Nova Scotia, Canada, June 11–15, 1956, the Commission so amended the proposal adopted at its Fifth Annual Meeting as to provide for an alternative to the "five thousand pound-ten percent" exemption per fishing trip applicable to the taking of haddock and cod in Sub-area 5. Under the alternative provided by the Commission's amended proposal all Contracting Governments may also exempt from the mesh size restriction any person who does not catch, in any period of twelve months, haddock or cod in quantities in excess of ten percent for each species of all the trawl-caught fish taken by such persons during such period of twelve months.

Acceptance of the proposal adopted at the Commission's Fifth Annual Meeting, as amended by the Commission at its Sixth Annual Meeting, was completed by the Governments of the United States and Canada on November 26, 1956. Accordingly, in accordance with the provisions of the International Convention for the Northwest Atlantic Fisheries, the proposal as adopted and amended entered into force with respect to all Contracting Governments on March 26, 1957.

In accordance with section 4 (a) of the Northwest Atlantic Fisheries Act of 1950, amendments to existing regulations which are proposed to implement the Commission's proposals, as described above, were submitted to the Advisory Committee to the United States Commissioners on the International Commission for the Northwest Atlantic Fisheries on March 5, 1957, at which time the proposed revised regulations received the approval, in principle, of the Advisory Committee.

Notice is hereby given, pursuant to section 4 (a) of the Administrative Procedure Act of June 11, 1946 (60 Stat. 237), that the Secretary of the Interior proposes to adopt the regulations set forth in tentative form below to replace Part 155—Haddock Provisions. The proposed regulations, to become effective on or about August 1, 1957, are to be issued under the authority contained in section 7 (a) of the Northwest Atlantic Fisheries Act of 1950 (64 Stat. 1067, 1069; 16 U. S. C. 986), and tentatively are as follows:

Sec.	
155.1	Meaning of terms.
155.2	Registration certificates.
155.3	Restrictions on fishing gear.
155.4	Temporary suspension of registration certificates.
155.5	Certain persons and vessels exempted.

AUTHORITY: §§ 155.1 to 155.5 issued under sec. 7, 64 Stat. 1067, 1069; 16 U. S. C. 986.

§ 155.1 *Meaning of terms.* When used in this part, unless the context otherwise requires, terms shall have the meanings ascribed in this section.

(a) *Regulatory area.* The words "regulatory area" mean that portion of the Convention area, including all waters except territorial waters, bounded by a line beginning at the terminus of the international boundary between the United States of America and Canada in Grand Manan Channel at a point in 44°46′35.34″ north latitude, 66°54′11.23″ west longitude; thence due south to the parallel of 43°50′ north latitude; thence due west to the Meridian of 67°40′ west longitude; thence due south to the parallel of 42°20′ north latitude; thence due east to a point in 66° west longitude; thence along a rhumb line in a southeasterly direction to a point in 42° north latitude; 65°40′ west longitude; thence due south to the parallel of 39° north latitude; thence due west to the Meridian of 71°40′ west longitude; thence due north to a point three miles off the coast of the State of Rhode Island; thence along the coasts of Rhode Island, Massachusetts, New Hampshire, and Maine at a distance of three miles to the point of beginning.

(b) *Haddock.* The word "haddock" denotes any fish of the species Melanogrammus aeglefinus.

(c) *Haddock fishing.* The words "haddock fishing" mean and include (1) the catching, taking or fishing for or the attempted catching, taking or fishing for fish of the species Melanogrammus aeglefinus; and (2) the outfitting and departure of a vessel for or the return of a vessel from haddock fishing.

(d) *Cod.* The word "cod" denotes any fish of the species Gadus callarias.

(e) *Cod fishing.* The words "cod fishing" mean and include (1) the catching, taking or fishing for or the attempted catching, taking or fishing for fish of the species Gadus callarias; and (2) the outfitting and departure of a vessel for or the return of a vessel from cod fishing.

(f) *Fishing vessel.* The words "fishing vessel" denote every kind, type or description of watercraft or vessel subject to the jurisdiction of the United States used in or outfitted for catching or processing fish or transporting fish from fishing grounds.

(g) *Trawl net.* The words "trawl net" mean any large bag net dragged in the sea by a vessel or vessels for the purpose of taking fish.

(h) *Cod end.* The words "cod end" mean the bag-like extension attached to the after end of the belly of the trawl net and used to retain the catch.

§ 155.2 *Registration certificates.* (a) Unless permitted to do so by § 155.5, after the __ day of ______, 1957, no person shall engage in haddock fishing or cod fishing within the regulatory area, nor shall any person possess, transport or deliver by means of any fishing vessel haddock or cod taken within such area except under a registration certificate issued and in force in conformity with the provisions of this part.

(b) The owner or operator of a fishing vessel may obtain without charge a registration certificate by furnishing, on a form to be supplied by the U. S. Fish and Wildlife Service, information specifying the names and addresses of the owner and operator of the vessel, the name, official number and home port of the vessel, and the period for which the registration certificate is desired. The form shall be submitted, in duplicate, to the Regional Director, U. S. Fish and Wildlife Service, Boston, Massachusetts, who shall grant the registration certificate for the duration specified by the applicant in the form but in no event to extend beyond the end of the calendar year during which the registration certificate is issued. New registration certificates shall similarly be issued to replace expired, lost or mutilated certificates. An application for replacement of an expiring registration certificate shall be made in like manner as the original application not later than ten days prior to the expiration date of the expiring certificate.

(c) The registration certificate so issued by the U. S. Fish and Wildlife Service shall be carried on board the vessel for which it is issued at all times and such certificate, the vessel, its gear and equipment shall at all times be subject to inspection for the purposes of this part by officers authorized to enforce the provisions of this part.

§ 155.3 *Restrictions on fishing gear.* (a) No person shall possess at any time on board a vessel for which a registration certificate is in force, or use or attempt to use from such vessel, a trawl net or nets, parts of nets or netting of manila twine having a mesh size of less than four and one-half inches as defined in this section, nor a trawl net or nets, parts of nets or netting of material other than manila twine unless it shall have a selectivity equivalent to that of a four and one-half inch manila trawl net.

(b) As used in this section, the term "mesh size of less than four and one-half inches" shall mean: (1) With respect to any part of the net except the cod end, the average size of any twenty consecutive meshes in any row located at least ten meshes from the side lacings measured when wet after use; and (2) with respect to the cod end, the average size of any row of meshes running the length of the cod end located at least ten meshes from the side lacings, measured when wet after use, or, at the option of the user, a cod end which has been approved, in accordance with paragraph (d) of this section, by an authorized employee of the U. S. Fish and Wildlife Service, as having a mesh size when dry before use equivalent to not less than four and one-half inches when wet after use.

(c) All measurements of meshes when wet after use shall be made by the insertion into such meshes under pressure of not less than ten nor more than fifteen pounds of a flat wedge-shaped gauge having a taper of two inches in eight inches and a thickness of three thirty-seconds of an inch.

(d) For the purpose of approving a dry cod end before use, as contemplated by paragraph (b) of this section, the average mesh size of such cod end shall be determined by measuring the length of any single row of meshes running the length of the cod end, parallel to the long axis of the cod end and located at least ten meshes from the side lacings, when stretched under a tension of two hundred pounds, and dividing the length by the number of meshes in such row: *Provided*, That not more than ten percent of the meshes in such row shall be more than one-half inch smaller when measured between knot centers than the average of the row. A cod end so measured which is constructed of one of the twines and is of not less than the average mesh size specified in the table below for such twine may be approved for haddock fishing or cod fishing by any authorized employee of the U. S. Fish and Wildlife Service by the attachment to such cod end of an appropriate seal.

Twine:	*Average mesh size*
4-ply 45-yard manila, double strand.	5.625 inches (5⅝").
4-ply 50-yard manila, double strand.	5.625 inches (5⅝").
4-ply 75-yard manila, double strand.	5.625 inches (5⅝").
4-ply 80-yard manila, double strand.	5.500 inches (5½").
120-thread cotton-------	4.250 inches (4¼").
No. 1000 braided nylon cargo netting, single strand (43 yd. per lb.).	4.875 inches (4⅞").
No. 400-550 braided nylon parachute cord, single strand.	4.750 inches (4¾").

(e) The alteration, defacement or reuse of any seal affixed to a cod end in accordance with this section is prohibited.

(f) The repair, alteration or other modification of a cod end to which a seal has been affixed in accordance with this section shall invalidate such seal and such cod end shall not thereafter be deemed to be approved for haddock fishing or cod fishing. Nothing contained in this paragraph shall preclude the continued use at the option of the user of a cod end having an invalidated seal affixed thereto if such cod end after repair, alteration or other modification does not have a mesh size of less than four and one-half inches as defined in paragraph (b) of this section.

(g) For the purposes of this section, a cod end constructed of twine other than manila and not subject to approval and certification when measured dry before use as provided in paragraph (d) of this section shall be deemed to have a selectivity equivalent to that of a four and one-half inch manila trawl net if such cod end has a mesh size of not less than four and one-half inches when measured wet after use in the manner prescribed in paragraph (b) of this section.

(h) The use in haddock fishing or cod fishing within the regulatory area of any device or method which will obstruct the meshes of the trawl net or which otherwise will have the effect of diminishing the size of said meshes is prohibited: *Provided*, That (1) a protective covering of canvas, netting, or other material may be attached to the underside of the cod end only of the net to reduce and prevent damage and (2) a rectangular piece of netting may be attached to the upper side of the cod end only of the net to reduce and prevent damage so long as the netting attached to the upper side of the cod end conforms to the following conditions:

(i) Such netting shall not have a mesh size less than that specified in this section. For the purposes of this paragraph, the required four and one-half inch mesh size when measured wet after use shall be deemed to be the average of the measurements of twenty consecutive meshes in a series across the netting, such measurements to be made with a like gauge inserted into the meshes as specified in paragraph (c) of this section.

(ii) Such netting may be fastened to the cod end of the trawl net only along the forward and lateral edges of the netting and at no other place in the netting.

(iii) Such netting shall not exceed sixteen meshes in length counted parallel to the long axis of the cod end and the width of the netting shall be at least one and one-half times the width of the area of the cod end which is covered; such widths to be measured at right angles to the long axis of the cod end.

§ 155.4 *Temporary suspension of registration certificates.* (a) The owner or operator of any fishing vessel which is proposed to be used in haddock fishing or cod fishing beyond the limits of the regulatory area or is proposed to be used in fishing within such area for species of fish other than haddock or cod, may obtain a temporary suspension of the registration certificate issued for such vessel for the specified period during which such nonregulated fishing is to be conducted.

(b) Temporary suspension of registration certificates shall be granted upon oral or written request, specifying the period of suspension desired, by an authorized officer of the State of Maine or of the State of Massachusetts or by an authorized officer of any one of the following agencies: U. S. Fish and Wildlife Service, Coast Guard, Bureau of Customs, Post Office Department. Such officer shall make appropriate endorsement on the certificate evidencing the duration of its suspension.

§ 155.5 *Certain persons and vessels exempted.* Except as otherwise provided in this section, nothing contained in §§ 155.2 to 155.4 shall apply to:

(a) Any person or vessel authorized by the Secretary of the Interior to engage in haddock fishing or cod fishing for scientific purposes.

(b) Any vessel documented as a common carrier by the Government of the United States and engaged exclusively in the carriage of freight and passengers.

(c) Any person who in the course of taking fish other than haddock or cod, takes and possesses a quantity of haddock or cod not exceeding five thousand pounds for each, or ten percent by weight for each, of all fish on board the vessel from which the fishing is conducted, whichever is the greater.

(d) Any person who does not take, in any period of twelve months, haddock or cod in quantities in excess of ten percent by weight for each of said species, of all the trawl-caught fish taken by such person in such period of twelve months. Any person desiring to avail himself of the exemption provided in this paragraph shall first obtain a certificate of exemption and shall comply with the following conditions:

(1) The owner or operator of a fishing vessel proposed to be operated under the exemption authorized in paragraph (d) of this section may obtain without charge a certificate of exemption by furnishing, on a form to be supplied by the U. S. Fish and Wildlife Service, information specifying the name and address of the owner and operator of the vessel and the name, official number, and the home port of the vessel. Each such application must be accompanied by a written statement, certified by the applicant to be correct, listing by weight, species, and catch by month, the total quantities of all fish taken, by means of the vessel to be exempted, during a period of twelve months immediately preceding the date of application. The application form and the certified statement shall be submitted, in duplicate, to the Regional Director, U. S. Fish and Wildlife Service, Boston, Massachusetts, who shall grant a certificate of exemption valid for a period of twelve months from the date of issue and authorizing the use during such period of the vessel for which issued in the taking of haddock or cod within the regulatory area without regard to the registration requirements and restrictions on fishing gear imposed, respectively, by §§ 155.2 and 155.3, so long as the vessel and its fishing gear are not used to take haddock or cod in quantities in excess of ten percent by weight for each species of all the trawl-caught fish taken by means of such vessel during the 12-month period covered by the certificate. Duplicate certificates of exemption shall be issued to replace lost or mutilated certificates. An application for renewal of an expiring

certificate of exemption shall be made in like manner as the original application not later than 15 days prior to the expiration date of the expiring certificate, but no renewal shall be granted if it is determined by said Regional Director that the vessel for which a renewal is sought was used to take quantities of haddock or cod in excess of the allowable percentages during the 12-month period covered by the expiring certificate of exemption.

(2) The certificate of exemption so issued by the U. S. Fish and Wildlife Service shall at all times be carried on board the vessel for which it is issued, and such certificate, the vessel, its gear and equipment, and records pertaining to the catches of fish made by means of such vessel shall at all times be subject to inspection by any officer authorized to enforce the provisions of this part.

(3) The owner or operator of a fishing vessel for which a certificate of exemption is in force shall furnish on a form supplied by the U. S. Fish and Wildlife Service, immediately following the delivery or sale of a catch of fish made by means of such vessel, a report, certified to be correct by the owner or operator, listing separately by species and weight the total quantities of all fish so sold or delivered. Such reports shall be delivered or mailed, in duplicate, to the said Regional Director.

(4) The owner or operator of a fishing vessel for which a certificate of exemption is in force, who proposes to use such vessel in fishing primarily for haddock or cod during any period of time within the 12-month period covered by the certificate, may obtain a temporary suspension of such certifiacte in like manner as provided in § 155.4 and may make application to engage in fishing for haddock or cod under a registration certificate as provided in § 155.2. Any haddock or cod taken by means of a vessel for which a registration certificate is in force and by means of haddock fishing or cod fishing conducted in conformity with the restrictions on fishing gear prescribed by § 155.3 shall be excluded from the total of all trawl-caught fish taken during the applicable 12-month period when computing the ratio of haddock or cod to the trawl-caught fish taken during such period. For the purposes of computing the quantities of haddock or cod so to be excluded, the owner or operator of a fishing vessel covered by a suspended certificate of exemption and taking haddock or cod while operating under a registration certificate shall submit catch reports in like manner as provided in subparagraph (3) of this paragraph.

Prior to the final adoption of the proposed regulations set forth above, consideration will be given to any data, views or arguments relating thereto which are submitted in writing to the Commissioner, U. S. Fish and Wildlife Service, Washington 25, D. C., within the period of thirty days from the date of publication of this notice in the FEDERAL REGISTER.

Dated: May 24, 1957.

ROSS LEFFLER,
Assistant Secretary of the Interior.

Department of State

NORTHWEST ATLANTIC FISHERIES CONVENTION AMENDMENT RATIFIED BY UNITED STATES:

The Protocol amending the International Convention for the Northwest Atlantic Fisheries of February 8, 1949, and promulgated at Washington on June 25, 1956, was ratified by the United States on May 22, 1957, the U. S. Department of State announced on June 17, 1957.

* * * * * *

INTERNATIONAL WHALING CONVENTION RATIFIED BY JAPAN:

The Protocol amending the International Whaling Convention of 1946, promulgated at Washington on November 19, 1956, was ratified by Japan on May 24, 1956, the U. S. Department of State announced on June 17, 1957.

Eighty-Fifth Congress (First Session)

Listed below and on the following pages are public bills and resolutions that directly or indirectly affect the fisheries and allied industries. Public bills and resolutions are shown when introduced; from month to month the more pertinent reports, hearings, or chamber actions on the bills shown are published; and if passed, they are shown when signed by the President.

ALASKA STATEHOOD: H. R. 7999 (O'Brien, New York) and H. R. 8027 (Saylor) introduced in the House on June 10, identical bills to provide for the admission of the State of Alaska into the Union; referred to the Committee on Interior and Insular Affairs.

H. R. 50 (Bartlett) was approved by the House Subcommittee on Territories on May 28, but due to the many amendments a "clean bill," H. R. 7999, was introduced. The new bill was reported (H. Rept. 624) favorably by the Committee on Interior and Insular Affairs on June 25. H. R. 7999 replaces the following bills: H. R. 50 (Bartlett); H. R. 340 (Mack); H. R. 849 (O'Brien); H. R. 628 (Engle); H. R. 1242 (Saylor); and H. R. 1243 (Saylor).

A similar Senate bill, S. 49 (Murray and others), was reported to the Senate Committee on Interior and Insular Affairs by the Subcommittee on Territories and Insular Affairs on July 1.

H. R. 7999 contains the following provisions pertaining to fisheries: (1) Transfers and conveys to Alaska certain Federal property used for the conservation and protection of fish and wildlife; (2) further provides that the new State shall receive from the Federal Government 70 percent of the net proceeds derived from the sale of fur-seal and sea-otter skins. (See Commercial Fisheries

Review, February 1957, p. 62, May 1957, p. 71, and June 1957, p. 69 for further information.)

House Report No. 624, providing for the admission of the State of Alaska into the Union (June 25, 1957, 85th Congress, 1st Session) to accompany H. R. 7999, 93 pp., printed, summarizes in detail the historical background, economic problems, pertaining to Alaska, and primary resources and readiness for statehood. Also gives details on the hearings held and reports since the first Alaska statehood bill was introduced in 1916 (64th Congress). The minority report is also given.

ALASKA FISHERY RESOURCES CONSERVATION: S. 2349 (Magnuson), introduced in the Senate on June 20, a bill to facilitate the conduct of fishing operations in the Territory of Alaska, to promote the conservation of fishery resources thereof, and for other purposes; to the Committee on Interstate and Foreign Commerce. The bill revises the White Act and proposes four separate items relating to the conduct of fishing operations in the Territory of Alaska: (1) repeal of the subsection that requires an escapement of 50 percent of the salmon runs in streams where weirs are operated and substituting flexible rule, (2) the statutory provision that requires a weekly closed period of 36 hours would be changed to allow the Secretary of the Interior to establish weekly closed periods consistent with the need of conservation of the fishery and the public interest, (3) would make the possession of illegally-caught fish a violation of the law, and (4) amends the present law to prohibit the taking of salmon within 500 yards of the mouth of a salmon stream by means of hand rod, spear, or gaff for commercial purposes. Also H. R. 8459 (Bonner) introduced in the House on June 28 and referred to the Committee on Merchant Marine and Fisheries; the bill is similar to S. 2349.

CHEMICAL ADDITIVES IN FOOD: H. R. 8112 (Miller of Nebraska) introduced in the House on June 13, a bill to protect the public health by amending the Federal Food, Drug, and Cosmetic Act to prohibit the use in food of food additives which have not been adequately tested to establish their safety; to the Committee on Interstate and Foreign Commerce. Similar in purpose to six other House bills and one Senate bill previously introduced. H. Res. 273 (Teller) introduced on June 5, a resolution to provide for a House Committee to study subject, referred to House Rules Committee. (See Commercial Fisheries Review, February 1957, p. 63, May 1957 p. 71, and June 1957, p. 69 for other bills.)

FISH AND WILDLIFE CONSERVATION TO BE EVALUATED IN FLOOD CONTROL PROJECTS: H. R. 8119 (Selden) introduced in the House on June 13, a bill to make evaluation of recreational benefits, and fish and wildlife conservation, resulting from any flood control, navigation, or reclamation project an integral part of project planning, and for other purposes. Also H. R. 8293 (Elliot) introduced on June 21. Both bills referred to the Committee on Interior and Insular Affairs. (See Commercial Fisheries Review, May 1957, p.71 for other bill in this subject.)

FISH AND WILDLIFE SERVICE REORGANIZATION: Reorganization of Fish and Wildlife Service, Hearing before the House Committee on Merchant Marine and Fisheries on Progress of Fish and Wildlife Reorganization, Pursuant to Public Law 1024, 84th Congress, 2d Session, 40 pp., printed, February 13, 1957.

HAWAII STATEHOOD: S. 50 (Murray) ordered favorably reported by the Sub-Committee on July 1, 1957, to the Senate Committee on Interior and Insular Affairs. (See Commercial Fisheries Review, February 1957, p. 64.)

INTERIOR DEPARTMENT APPROPRIATIONS: H. R. 5189 (Kirwin), a bill making appropriations for the Department of the Interior and related agencies (including the Fish and Wildlife Service) for the fiscal year ending June 30, 1958, and for other purposes. Favorably reported (S. Rept. 476) with amendments June 20 by the Senate Committee on appropriations and passed the Senate with amendments on June 24. The total funds recommended for the Fish and Wildlife Service for fiscal year 1958 is $25,354,900. This amount was $1,322,900 more than the amount recommended by the bill as passed by the House. Most of the increase in the Senate version was for the Office of the Commissioner. Funds for the Bureau of Commercial Fisheries were cut by the Senate from the $6,700,000 provided by the House Bill, to $6,598,510. This represents an increase of $117,510 in funds for general administrative expenses and a decrease of $219,000 in funds for management and investigation of resources. The $583,000 requested for education and training grants, under the Fishery Education Act of 1956 (Public Law 1027, 84th Congress), was disallowed. The sum of $350,000 was allotted for this purpose in the House-passed bill (passed February 26, H. Rept. 145).

The Senate also firmly recommended that separate administration functions be set up for the Bureau of Commercial Fisheries and the Bureau of Sport Fisheries and Wildlife.

The Conference Report (H. Rept. No. 653) was approved by House on June 28 and by the Senate on July 1 and sent to the President for signature. The House accepted all amendments proposed by Senate with the exception of the language to be used in recommendations for the administrative set-up of the two Bureaus.

All amendments to H. R. 5189 proposed by the Senate were adopted in the final conferences Report except for a change under the heading "Reorganization of the Fish and Wildlife Service" (authorized in the Fish and Wildlife Act of 1956, Public Law 1024 of the 84th Congress). The bill as finally passed recommends separate administrative services be set up for the two Bureaus. The details as to how this is to be accomplished is left up to the Secretary of the Interior with the proviso that when the plans for separate administrative set-ups are finalized they be submitted to the Bureau of the Budget for appoval. On the sum of $583,000 for "Education and Training Grants" authorized by Public Law 1027 of the 84th Congress, which was disallowed by the conferees, the opinion of both Houses of Congress (House Report No. 653) was that more time is required to allow the Bureau of Commercial Fisheries to develop more complete plans for this project.

The bill was signed by the President on July 1, 1957 (Public Law 85-77). (See Commercial Fishies Review, March 1957, pp. 59-60 for additional information.)

Senate Report No. 476, Department of the Interior and related Agencies Appropriation Bill, 1958 (June 20, 1957, 85th Congress, 1st Sesson) to accompany H. R. 5189, 39 pp., printed. Summarizes the bill and amendments made to House version of the bill (H. Rept. No. 145).

House Conference Report No. 653, Department of the Interior and Related Agencies Appropriation Bill, 1958 (June 27, 1957, 85th. Congress, 1st Session) to accompany H. R. 5189, 8 pp., printed. Summarizes the results of the Conference between the House and Senate.

Public Law 85-77, 85th. Congress, H. R. 5189, July 1, 1957: An Act Making Appropriations for the Department of the Interior and related Agencies for the fiscal year ending June 30, 1958, and for other purposes. The appropriations as they apply to the U. S. Fish and Wildlife Service are as follows:

FISH AND WILDLIFE SERVICE

BUREAU OF SPORT FISHERIES AND WILDLIFE

Management and Investigations of Resources

For expenses necessary for scientific and economic studies, conservation, management, investigation, protection, and utilization of
71 Stat. 263. sport fishery and wildlife resources, except whales, seals, and sea lions,
71 Stat. 264. and for the performance of other authorized functions related to such resources; operation of the industrial properties within the Crab Orchard National Wildlife Refuge (61 Stat. 770); maintenance of the herd of long-horned cattle on the Wichita Mountains Wildlife Refuge; purchase or rent of land, and functions related to wildlife
62 Stat. 238. management in California (16 U. S. C. 695–695c); and leasing and management of lands for the protection of the Florida Key deer, $12,000,000; and, in addition, there are appropriated amounts equal to 12½ per centum of the proceeds covered into the Treasury during the next preceding fiscal year from the sale of sealskins and other products, for management and investigations of the sport fishery and wildlife resources of Alaska, including construction.

Construction

For construction and acquisition of buildings and other facilities required in the conservation, management, investigation, protection, and utilization of sport fishery and wildlife resources and the acquisition of lands and interests therein, $5,677,000, to remain available
Transfer of funds. until expended: *Provided*, That the funds appropriated herein for the continuation of the construction of the Devils Kitchen Dam on the Crab Orchard Wildlife Refuge, Illinois, shall be transferred to the Corps of Engineers, Department of the Army.

General Administrative Expenses

For expenses necessary for general administration of the Bureau of Sport Fisheries and Wildlife, including such expenses in the regional offices, $166,190.

BUREAU OF COMMERCIAL FISHERIES

Management and Investigations of Resources

For expenses necessary for scientific and economic studies, conservation, management, investigation, protection, and utilization of commercial fishery resources, including whales, sea lions, and related aquatic plants and products; collection, compilation, and publication of information concerning such resources; promotion of education and training of fishery personnel; and the performance of other functions related thereto, as authorized by law; $5,781,000; and, in addition, there are appropriated amounts equal to 12½ per centum of the proceeds covered into the Treasury during the next preceding fiscal year from the sale of sealskins and other products, for management and investigations of the commercial fishery resources of Alaska, including construction.

Construction

For construction and acquisition of buildings and other facilities required for the conservation, management, investigation, protection, and utilization of commercial fishery resources and the acquisition of lands and interests therein, $700,000, to remain available until expended.

General Administrative Expenses

For expenses necessary for general administration of the Bureau of Commercial Fisheries, including such expenses in the regional offices, $117,510.

Fisheries Loan Fund

During the current fiscal year not to exceed $313,000 of the fisheries loan fund shall be available for expenses of administering such fund.

71 Stat. 264.
71 Stat. 265.

ADMINISTRATION OF PRIBILOF ISLANDS

For carrying out the provisions of the Act of February 26, 1944, as amended (16 U. S. C. 631a–631q), there are appropriated amounts 58 Stat. 100. equal to 60 per centum of the proceeds covered into the Treasury during the next preceding fiscal year from the sale of sealskins and other products, to remain available for expenditure during the current and next succeeding fiscal years.

OFFICE OF THE COMMISSIONER OF FISH AND WILDLIFE

SALARIES AND EXPENSES

For necessary expenses of the Office of the Commissioner, $913,200.

ADMINISTRATIVE PROVISIONS

Appropriations and funds available to the Fish and Wildlife Service shall be available for purchase of not to exceed one hundred and fourteen passenger motor vehicles for replacement only; purchase of not to exceed six aircraft for replacement only; not to exceed $30,000 for payment, in the discretion of the Secretary, for information or evidence concerning violations of laws administered by the Fish and Wildlife Service; publication and distribution of bulletins as authorized by law (7 U. S. C. 417); rations or commutation of rations for 34 Stat. 690. officers and crews of vessels at rates not to exceed $3 per man per day; repair of damage to public roads within and adjacent to reservation areas caused by operations of the Fish and Wildlife Service; options for the purchase of land at not to exceed $1 for each option; facilities incident to such public recreational uses on conservation areas as are not inconsistent with their primary purposes; and the maintenance and improvement of aquaria, buildings, and other facilities under the jurisdiction of the Fish and Wildlife Service and to which the United States has title, and which are utilized pursuant to law in connection with management and investigation of fish and wildlife resources.

INSECTICIDES STUDY OF EFFECT ON FISH AND WILDLIFE: S. 2447 (Magnuson) introduced in the Senate on July 2, a bill to authorize and direct the Secretary of the Interior to undertake continuing studies of the effects of insecticides, herbicides, and fungicides upon fish and wildlife for the purpose of preventing losses of those invaluable natural resources following spraying and to provide basic data on the various chemical controls so that forests, croplands, and marshes can be sprayed with minimum losses of fish and wildlife; to the Committee on Interstate and Foreign Commerce. Similar to H. R. 783 (Metcalf) introduced in the House on January 3. See Commercial Fisheries Review, February 1957, p. 64 for other bill on this subject.

LABOR, HEALTH, EDUCATION, WELFARE APPROPRIATIONS: H. R. 6287 (S. Rept. No. 636) passed by the Senate on June 25. An amendment by the Senate proposes that the Office of Education be allotted the sum of $228,000 for vocational education in the fishery trades.

NORTH PACIFIC FISHERIES ACT OF 1954: H. R. 8035 (Bonner) introduced in the House on June 10, a bill to amend the North Pacific Fisheries Act of 1954; to the Committee on Merchant Marine and Fisheries. Similar to S. 2212 (Magnuson) and H. R. 7974 (Tollefson).

S. 2212, with amendments; was reported by the Committee on Interstate and Foreign Commerce (S. Rept. 439) on June 14 and passed the Senate on June 26.

H. R. 7974 (Tollefson) favorably reported (H. Rept. 704) by the House Merchant Marine and Fisheries Committee on July 2. (See Commercial Fisheries Review, June 1957, p. 69 for additional information on this bill.)

SMALL BUSINESS ACT AMENDMENT: H. R. 7963 (Spence) a bill to amend the Small Business Act of 1953, as amended; reported (H. Rept. No. 555) without amendment on June 13 by the Committee on Banking and Currency and referred to the Committee on the Whole House on the State of the Union.

Passed the House on June 25. This bill rewrites the Small Business Act and provides for making the Small Business Administration a permanent agency to increase the authorization for loans to small business, and reduces the interest rate on loans. Adopted an amendment fixing the period of time within which the administrator is to establish a new definition of small business. (See Commercial Fisheries Review, February 1957, pp. 66-67, April 1957, p. 66, May 1957, p. 72, and June 1957, pp. 69-70.)

SOCKEYE SALMON FISHERY ACT: H. R. 6587 (Tollefson) a bill to amend the Sockeye Salmon Fishery Act of 1947; with amendment (H. Rept. No. 557) reported by the Committee on Merchant Marine and Fisheries and referred to the Committee on the Whole House on the State of the Union on June 13. S. 1806 (Magnuson) previously passed by the Senate on May 22 was substituted for H. R. 6587 and passed the House on July 1, enrolled and sent to the President for signing on July 2. (See Commercial Fisheries Review, April 1957, p. 67, May 1957, p. 72, and June 1957, p. 70 for additional information.)

BOILED LOBSTER FOR BARBECUES

As a new angle to backyard barbecues in the summertime, the Fish and Wildlife Service suggests a New England outdoor barbecue featuring boiled lobsters.

BOILED LOBSTERS

Practically everyone enjoys the tender delicately-flavored meat of the northern lobster--"the king of shellfish"--which supplies high-quality proteins, vitamins, and minerals.

Live lobsters, which are dark-bluish green in color, should be purchased by the housewife. They generally weigh from 1 to 3 pounds and are graded in four sizes: chickens, quarters, large, and jumbos. The chicken lobster, weighing about one pound, is the most economical and widely used.

Lobsters must be alive up to the time of cooking. During cooking the color of the shell changes rapidly to "lobster red."

The home economists of the Bureau of Commercial Fisheries suggest that you serve baked potatoes and buttered peas along with the boiled lobsters. These can be cooked on the barbecue grill by wrapping them separately in Aluminum foil.

BOILED LOBSTERS

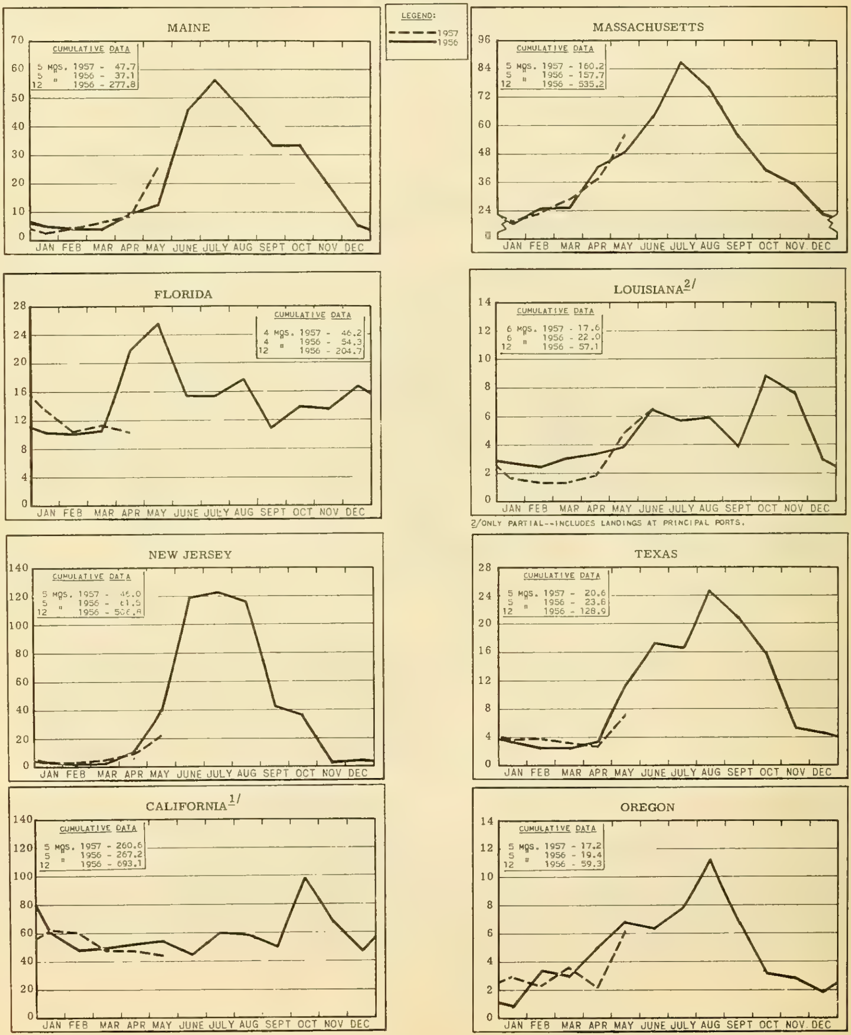
- 2 LIVE LOBSTERS (1 POUND EACH)
- 3 QUARTS BOILING WATER
- 3 TABLESPOONS SALT
- MELTED BUTTER

Plunge lobsters headfirst into boiling salted water. Cover and return to boiling point. Simmer for 20 minutes. Drain. Place lobster on its back. With a sharp knife cut in half lengthwise. Remove the stomach, which is just back of the head, and the intestinal vein, which runs from the stomach to the tip of the tail. Do not discard the green liver and coral roe; they are delicious. Crack claws. Serve with butter. Serves 2.

FISHERY INDICATORS

CHART 1 - FISHERY LANDINGS for SELECTED STATES

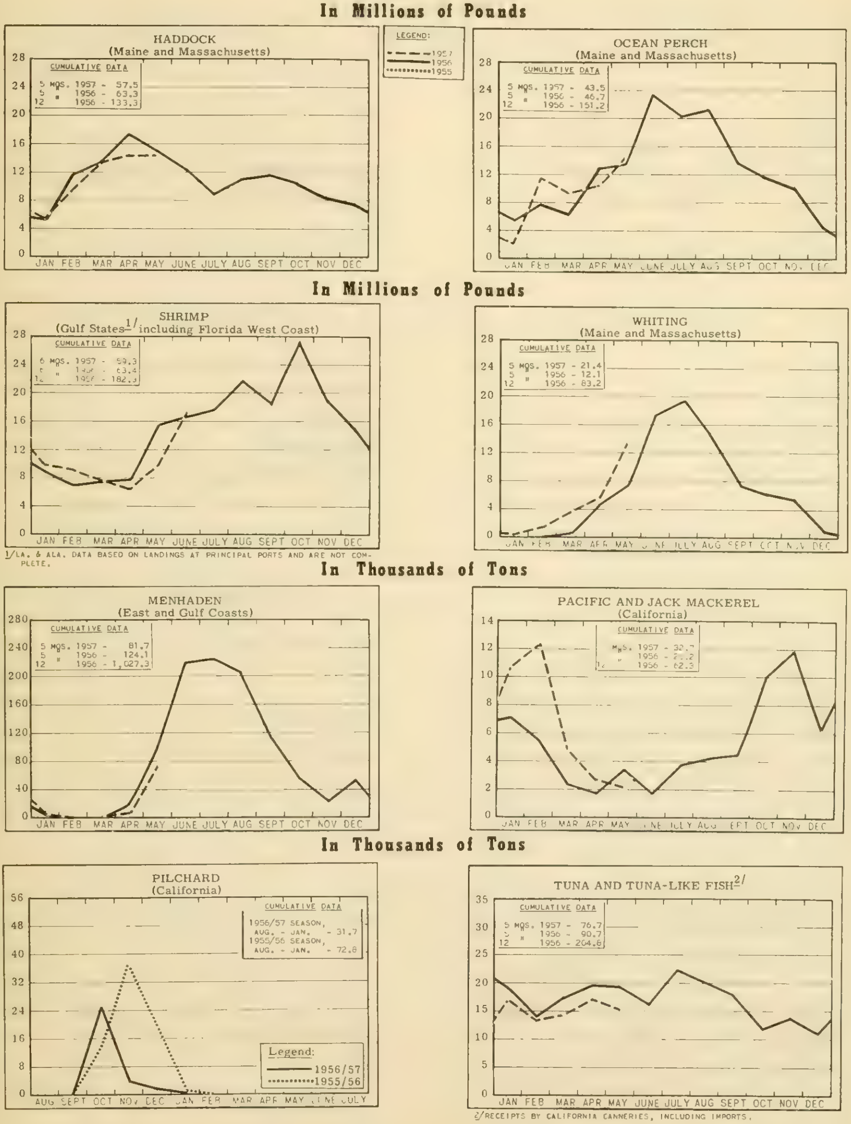
In Millions of Pounds



2/ONLY PARTIAL--INCLUDES LANDINGS AT PRINCIPAL PORTS.

1/ONLY PARTIAL--INCLUDING PRODUCTION OF MAJOR FISHERIES AND MARKET FISH LANDINGS AT PRINCIPAL PORTS.

CHART 2 - LANDINGS for SELECTED FISHERIES

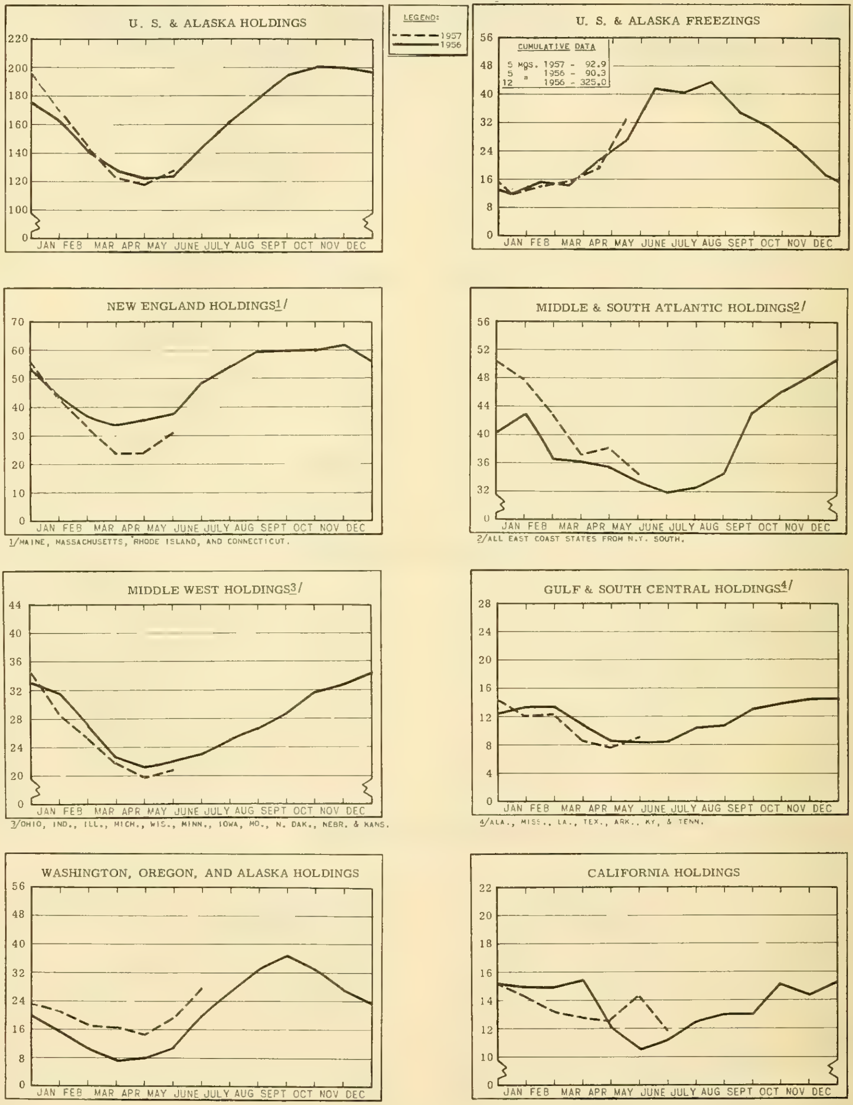


1/LA. & ALA. DATA BASED ON LANDINGS AT PRINCIPAL PORTS AND ARE NOT COMPLETE.

2/RECEIPTS BY CALIFORNIA CANNERIES, INCLUDING IMPORTS.

CHART 3 - COLD-STORAGE HOLDINGS and FREEZINGS of FISHERY PRODUCTS *

In Millions of Pounds



1/MAINE, MASSACHUSETTS, RHODE ISLAND, AND CONNECTICUT.

2/ALL EAST COAST STATES FROM N.Y. SOUTH.

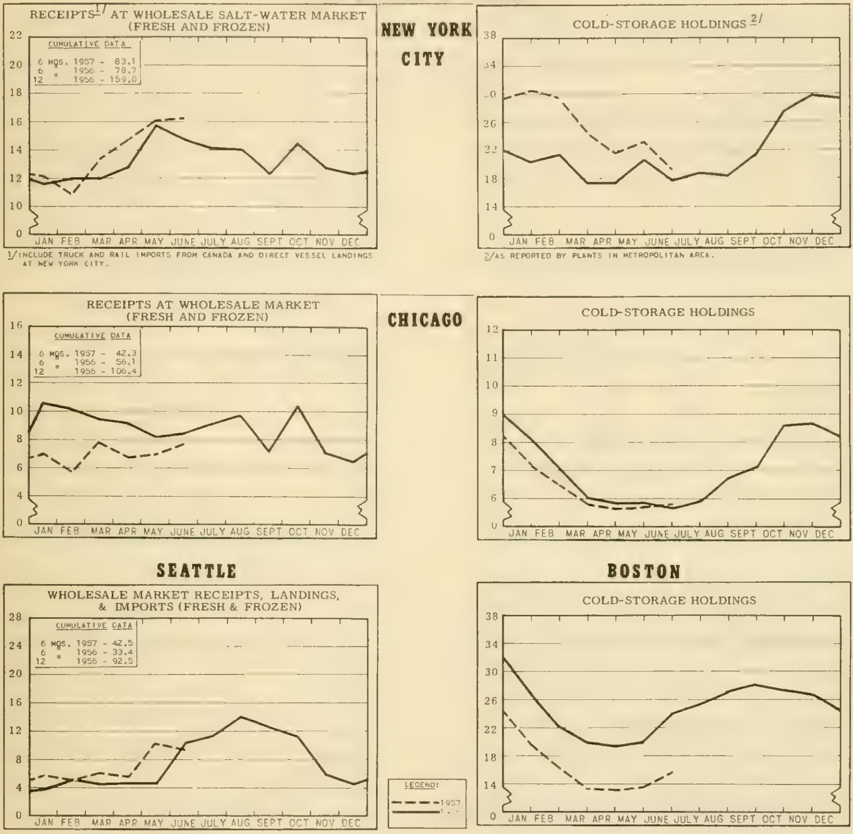
3/OHIO, IND., ILL., MICH., WIS., MINN., IOWA, MO., N. DAK., NEBR. & KANS.

4/ALA., MISS., LA., TEX., ARK., KY, & TENN.

*Excludes salted, cured, and smoked products.

CHART 4 - RECEIPTS and COLD-STORAGE HOLDINGS of FISHERY PRODUCTS at PRINCIPAL DISTRIBUTION CENTERS

In Millions of Pounds



1/ INCLUDE TRUCK AND RAIL IMPORTS FROM CANADA AND DIRECT VESSEL LANDINGS AT NEW YORK CITY.

2/ AS REPORTED BY PLANTS IN METROPOLITAN AREA.

CHART 5 - FISH MEAL and OIL PRODUCTION - U.S and ALASKA

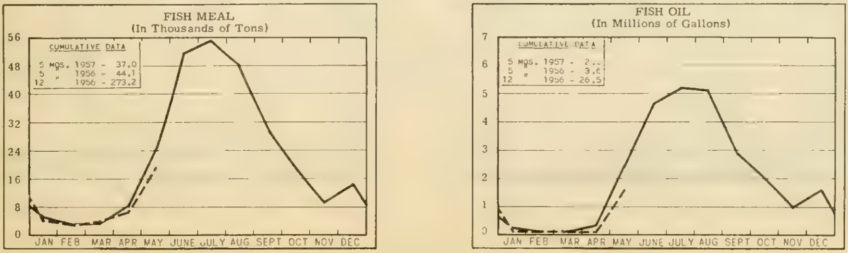
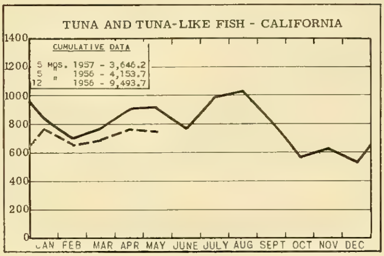
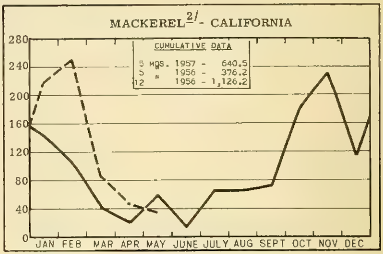


CHART 6 - CANNED PACKS of SELECTED FISHERY PRODUCTS

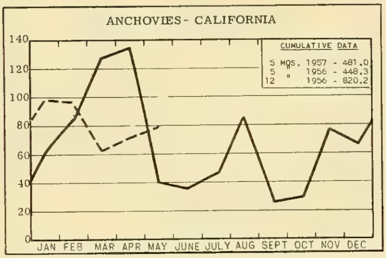
In Thousands of Standard Cases

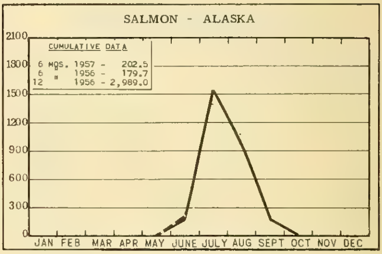
LEGEND:
- - - - 1957
——— 1956

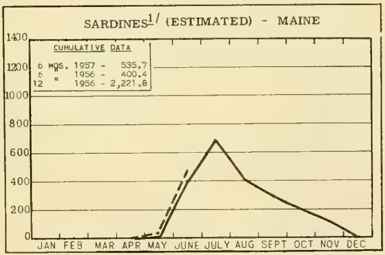

TUNA AND TUNA-LIKE FISH - CALIFORNIA


MACKEREL[2/] - CALIFORNIA

2/ INCLUDES PACIFIC MACKEREL AND JACK MACKEREL.


ANCHOVIES - CALIFORNIA

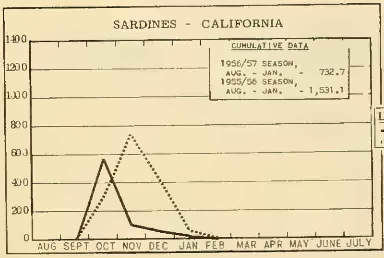

SALMON - ALASKA


SARDINES[1/] (ESTIMATED) - MAINE

1/ INCLUDING SEA HERRING.

STANDARD CASES

Variety	No. Cans	Can Designation	Net Wgt.
SARDINES	100	¼ drawn	3¼ oz.
SHRIMP..........	48	--	5 oz.
TUNA	48	No. ½ tuna	6 & 7 oz.
PILCHARDS	48	No. 1 oval	15 oz.
SALMON	48	1-pound tall	16 oz.
ANCHOVIES	48	½ lb.	8 oz.


SARDINES - CALIFORNIA

Legend:
——— 1956/57
.... 1955/56

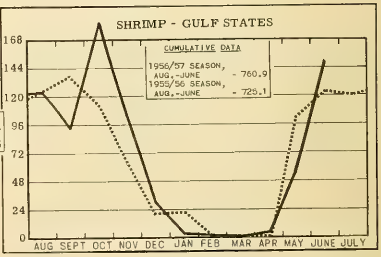
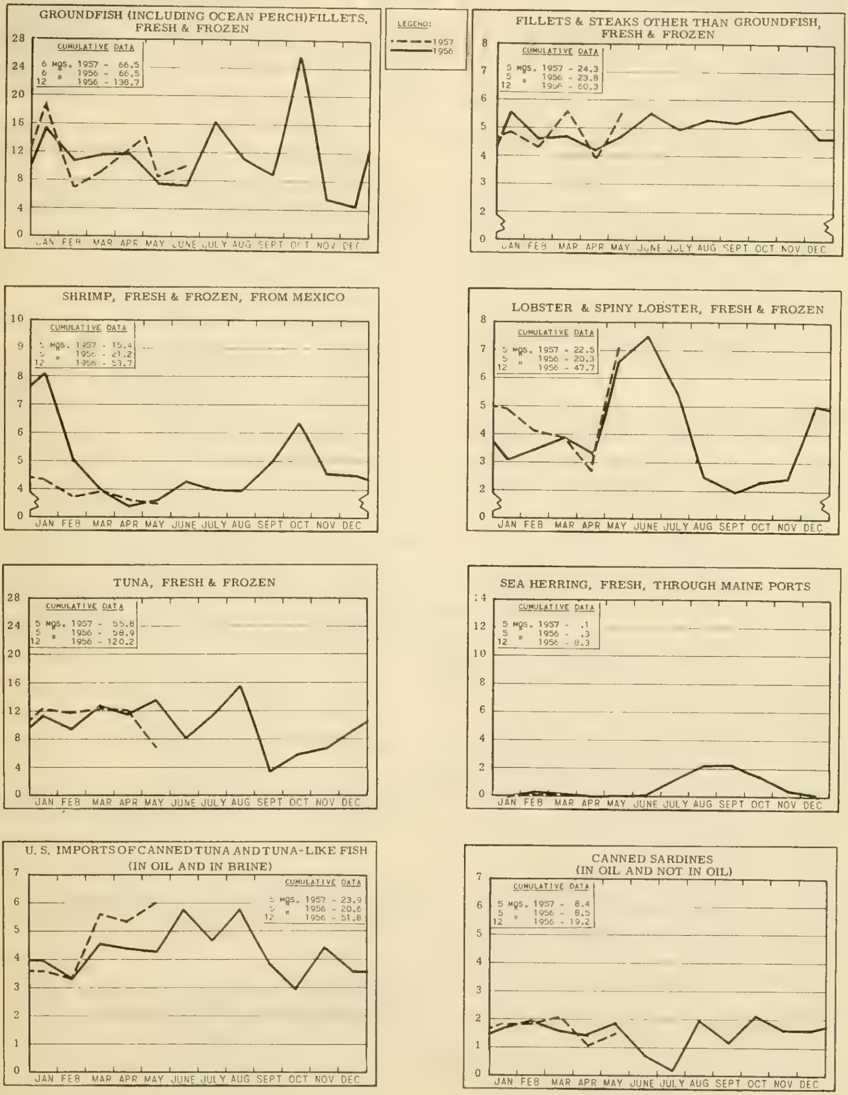
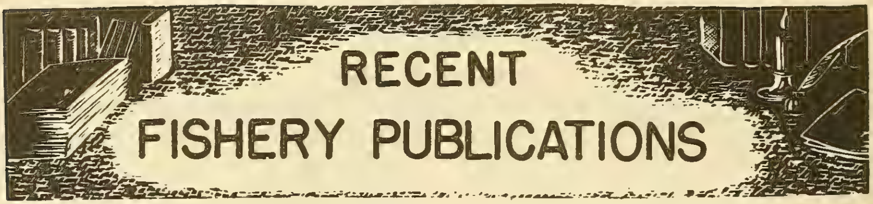

SHRIMP - GULF STATES

CHART 7 - U.S. FISHERY PRODUCTS IMPORTS

In Millions of Pounds





RECENT FISHERY PUBLICATIONS

FISH AND WILDLIFE SERVICE PUBLICATIONS

THESE PROCESSED PUBLICATIONS ARE AVAILABLE FREE FROM THE DIVISION OF INFORMATION, U.S. FISH AND WILDLIFE SERVICE, WASHINGTON 25, D.C. TYPES OF PUBLICATIONS ARE DESIGNATED AS FOLLOWS:

CFS - CURRENT FISHERY STATISTICS OF THE UNITED STATES AND ALASKA.
FL - FISHERY LEAFLETS.
SL - STATISTICAL SECTION LISTS OF DEALERS IN AND PRODUCERS OF FISHERY PRODUCTS AND BYPRODUCTS.
SSR - FISH. - SPECIAL SCIENTIFIC REPORTS--FISHERIES (LIMITED DISTRIBUTION).
SEP.- SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW.

Number Title
CFS-1535 - Massachusetts Landings, September 1956, 6 pp.
CFS-1538 - Florida Landings, February 1957, 6 pp.
CFS-1539 - Georgia Landings, 1956 Annual Summary, 3 pp.
CFS-1540 - Gulf Fisheries, 1955 Annual Summary, 10 pp.
CFS-1541 - Mississippi River Fisheries, 1955 Annual Summary, 8 pp.
CFS-1542 - North Carolina Landings, March 1957, 2 pp.
CFS-1543 - South Carolina Landings, March 1957, 2 pp.
CFS-1544 - Ohio Landings, March 1957, 2 pp.
CFS-1545 - California Landings, January 1957, 4 pp.
CFS-1547 - New Jersey Landings, March 1957, 4 pp.
CFS-1548 - California Landings, February 1957, 4 pp.
CFS-1549 - Georgia Landings, March 1957, 2 pp.
CFS-1551 - Maine Landings, March 1957, 3 pp.
CFS-1552 - Texas Landings, March 1957, 3 pp.
CFS-1553 - New York Landings, March 1957, 4 pp.
CFS-1554 - Massachusetts Landings, October 1956, 6 pp.
CFS-1555 - Massachusetts Landings, November 1956, 6 pp.
CFS-1556 - Frozen Fish Report, April 1957, 8 pp.
CFS-1557 - Ohio Landings, April 1957, 2 pp.
CFS-1558 - Massachusetts Landings, December 1956, 6 pp.
CFS-1559 - Shrimp Landings, January 1957, 5 pp.
CFS-1567 - South Carolina Landings, April 1957, 2 pp.
CFS-1568 - Georgia Landings, April 1957, 2 pp.

FL-147 - List of Federal Fish-Cultural Stations 7 pp., revised January 1957.

FL-439 - The Dungeness Crab Industry, by Fred W. Hipkins, 12 pp., illus., May 1957. Deals with the Dungeness Crab, Cancer magister, often called the Pacific crab. Includes a brief history of the commercial fishery, fishing areas, methods of capture, fishing boats, and regulations for the commercial fishery of Dungeness crabs. Methods of processing and marketing are also included. Statistics are given on landings of Dungeness crabs in California, Oregon, Washington, and Alaska from 1946 to 1954, and the annual pack of canned crabs from 1948 to 1955.

SL-10 - Wholesale Dealers in Fishery Products, Maryland, 1957 (revised).

SSR-Fish. No. 207 - Toxicity of 4,346 Chemicals to Larval Lampreys and Fishes, by Vernon C. Applegate, John H. Howell, A. E. Hall, Jr., and Manning A. Smith, 160 pp., March 1957. Results of a study to locate chemicals which would be acutely toxic to larval sea lampreys at extremely low concentrations and which, at the same concentrations, would be non-toxic to other fishes inhabiting the same natural environments.

Sep. No. 479 - North Pacific Albacore Tuna Exploration by the M/V John N. Cobb--1956.

Sep. No. 480 - Research in Service Laboratories (June 1957): Contains these articles--"Cold Storage of Frozen Pacific Oysters (Crassostrea gigas) - No. 2 - Effect of Antioxidant and Other Treatments on Keeping Quality;" "Chemical Composition Varies for Different Parts of Fish;" "Commercial Use of Alaska Sea Lions Studied;" "Study of Dry Solids, Salt, and Free Liquor Relationships in Oysters;" and "Technical Note No. 38 - A Portable Fish Meal Blender for Pilot-Plant Use."

THE FOLLOWING SERVICE PUBLICATIONS ARE AVAILABLE ONLY FROM THE SPECIFIC OFFICE MENTIONED.

California Fishery Products Monthly Summary, April 1957, 10 pp. (Market News Service, U.S. Fish and Wildlife Service, Post Office Bldg., San Pedro, Calif.) California cannery receipts of raw tuna and tunalike fish, herring, mackerel, anchovies, and squid; pack of canned tuna, herring, mackerel, anchovies, and squid; market fish receipts at San Pedro, Santa Monica, San Diego, and Eureka areas; California imports; canned fish and frozen fish prices; for the month indicated.

Gulf Monthly Landings, Production, and Shipments of Fishery Products, May 1957, 5 pp. (Market News Service, U.S. Fish and Wildlife Service, 609-611 Federal Bldg., New Orleans 12, La.) Gulf States shrimp, oyster, finfish, and blue crab landings; crab meat production; LCL express shipments from New Orleans; and wholesale prices of fish and shellfish on the New Orleans French Market; for the month indicated.

Monthly Summary of Fishery Products Production in Selected Areas of Virginia, North Carolina, and Maryland, April 1957, 4 pp.; Monthly Summary of Fishery Products Production in Selected Areas of Virginia, North Carolina, and Maryland, May 1957, 4 pp. (Market News Service, U.S. Fish and Wildlife Service, 18 S. King St., Hampton, Va.) Fishery production for the Virginia areas of Hampton Roads, Lower Northern Neck, and Eastern Shore; the Maryland areas of Crisfield, Ocean City, and Cambridge; and the North Carolina areas of Atlantic, Beaufort, and Morehead City; together with cumulative and comparative data; for the months indicated.

(New York) Monthly Summary - February 1957 - Receipts of Fishery Products at the New York City Wholesale Salt-Water Market, 13 pp. (Market News Service, U.S. Fish and Wildlife Service, 155 John St., New York 38, N.Y.) Receipts in the salt-water section of the Fulton Fish Market by species and by states and provinces for the month indicated.

THE FOLLOWING SERVICE PUBLICATION IS FOR SALE AND IS AVAILABLE ONLY FROM THE SUPERINTENDENT OF DOCUMENTS, WASHINGTON 25, D. C.

How to Cook Lobsters, by Jean Burtis, Ellen H. Nagy, and Rose G. Kerr, Test Kitchen Series No. 11, 15 pp., illus., printed, 20 cents, 1957. Not only recipes for cooking lobsters, but illustrations on how this shellfish should be eaten are included. The booklet contains 33 recipes developed and kitchen-tested by the Service's staff of home economists for two kinds of lobsters--the large northern and the spiny or rock lobster. Some of the recipes included in the new publication are: Lobster and Cheese Delights, Lobster and Orange Cocktail, French Fried Spiny Lobster Tails, Baked Stuffed Lobsters with Cheese, Lobster Thermidor, Lobster Newburg, Lobster Tarts, Lobster in Sour Cream, Lobster and Walnut Sandwiches, and Lobster Waffles. A page of five pictures is devoted to illustrating the essential steps in "how to eat a lobster" so that only the shell is left.

MISCELLANEOUS PUBLICATIONS

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM. CORRESPONDENCE REGARDING PUBLICATIONS THAT FOLLOW SHOULD BE ADDRESSED TO THE RESPECTIVE ORGANIZATION OR PUBLISHER MENTIONED. DATA ON PRICES, IF READILY AVAILABLE, ARE SHOWN.

ANIMAL FEEDING:

"Feeding Mackerel and Herring to Mink Kits," by K. Hovgaard Nielsen, article, Dansk Pelsdyravl, vol. 18, June 1955, pp. 223-225, printed. Dansk Pelsdyravl, Sdeasdy 8, Copenhagen, Denmark.

BAIT FISH:

A Study of the Eastern Pacific Fishery for Tuna Baitfishes, with Particular Reference to the Anchoveta (CETENGRAULIS MYSTICETUS), by Franklin G. Alverson and Bell M. Shimada, Bulletin vol. 11, no. 2, pp. 25-79, illus., printed in English and Spanish. Inter-American Tropical Tuna Commission, La Jolla, Calif., 1957. With the substantial increase in recent years in the production of the tropical tunas, there have been greater demands for live bait. This increased need for larger amounts of bait fishes has given rise to important questions relating to the manner in which these populations may be most wisely used. The Inter-American Tropical Tuna Commission has been concerned with various aspects of this problem since its establishment in 1950. This report presents some of the results obtained from the Commission's studies of the bait fishes important to the fishery for yellowfin and skipjack tuna. It traces briefly the origin and development of the bait fishery, describes its operations, extent, and yield, and discusses some aspects of the effects of exploitation upon the Eastern Pacific bait fish populations, particularly of the anchoveta (Cetengraulis mysticetus). The authors conclude from the available data "that during the period 1946 to 1954 the California fishery for yellowfin and skipjack tunas did not reach an intensity sufficiently high to markedly affect the abundance of any of the major species of bait fishes in the Eastern Pacific Ocean. Furthermore, at present levels of exploitation, there is no imminent danger of these bait fish populations being reduced to sizes below those corresponding to the maximum sustainable harvest."

CALIFORNIA:

Preliminary Report of the Assembly Interim Committee on Fish and Game, vol. 5, no. 2, 19 pp., printed. California Legislature, Sacramento, Calif., 1957.

Report by the Assembly Interim Committee on Fish and Game, vol. 5, no. 3, 123 pp., illus., printed. California Legislature, Sacramento, Calif., 1957.

Statistical Report of Fresh, Canned, Cured, and Manufactured Fishery Products, Year 1956, Circular No. 31, 15 pp., printed. Marine Fisheries Branch, Department of Fish and Game, Sacramento 14, Calif., 1957. This is the 31st consecutive report of fresh and processed fishery products produced in California. Through the annual publication of these figures, the State Legislature, commissioners, members of industry, sportsmen, and other interested individuals and groups can obtain a picture of trends and developments. The tables are basically the same as in previous years. Landings of each species of fish, mollusk, and crustacean by the commercial fishing fleet are recorded in pounds. These landings are separated into seven general regions and totaled Statewide. General origin of the commercial catch and the volume of shipments are recorded. Shipment figures represent fish received for canning and processing. Total case pack is listed for each variety of fish according to container size and type of pack. The record of the pack is presented separately for the Los Angeles and San Diego districts and for Central California. The latter includes all the area from the San Luis Obispo-Santa Barbara County line to the State's northern boundary. Most of the canning reported in the Central California category, however, is from Monterey and the San Francisco Bay area. Other fishery products processed in California are recorded. The combined volume of canned and smoked sport-caught fish is listed.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

All the information on production used in these tables is obtained from monthly and annual reports submitted by the industry. Sardine landings and the products manufactured are recorded. Total annual case pack of anchovy, tuna, bonito, and yellowtail in various sizes of containers has been equated to the most common pack size for each variety.

CANADA:

1953 Landings of Atlantic Groundfish in Canada (Excluding Newfoundland), by W. R. Martin and G. J. W. Sullivan, Statistical Series Circular No. 7, 10 pp., illus., processed. Fisheries Research Board of Canada, Biological Station, St. Andrews, N.B., Canada, February 1957. This circular provides a digest of 1953 groundfish statistics for Canada, excluding Newfoundland. Simple graphs and tables summarize landings by area fished, months, type of fishing, and fishing effort.

"Protein Hunters of the Atlantic," by Mark Ronayne, article, Trade News, vol. 9, no. 9, March 1957, pp. 3-8, 16, illus., printed. Department of Fisheries, Ottawa, Canada. A summary of the extensive fisheries research being conducted at the Fisheries Research Board's Biological Station in St. John's, Newfoundland. This research deals primarily with the various groundfish species since these comprise the bulk of the important commercial species in both inshore and offshore Newfoundland waters. Other types of research going on at the St. John's Station are described.

CLAMS:

The Maine Clam (MYA ARENARIA), by Robert L. Dow and Dana E. Wallace, 35 pp., illus., printed. Department of Sea and Shore Fisheries, State House, Augusta, Maine, April 1957. Contains a history of Maine's soft-clam fishery, its commercial importance, and distribution. Describes and illustrates the anatomy of the clam and discusses some of the factors which, taken together, make up what is called the life history of the clam. Also includes a history of clam conservation and management of the resource.

COD:

Atlantic Cod Tagging off the Southern Canadian Mainland, by R. A. McKenzie, Bulletin No. 105, 99 pp., illus., printed. Fisheries Research Board of Canada, Ottawa, Canada, 1956. This paper deals mainly with the results of taggings from 1930 to 1940 in many of the principal cod fishing areas in the Bay of Fundy, off the outer coast of Nova Scotia, and in the southwestern Gulf of St. Lawrence. It was found that "Cod populations present in summer inshore from the Bay of Fundy to Canso were largely stationery, mixing only slightly with their neighbors along shore or offshore. On the banks off eastern Nova Scotia mixing was not sufficient to make one homogenous population, cod summering in the Banquereau area being more or less separate from those about Sable Island. There was an annual migration, best developed close to the Laurentian Channel, of cod wintering on the eastern banks and the inshore grounds off the outer coast of Nova Scotia and summering about northern Cape Breton or in the Gulf of St. Lawrence; there were apparently divisions within this migratory stock. Most of the cod of the Gaspe-Anticosti and Prince Edward Island-northern New Brunswick areas apparently remained in the Gulf, with some mixing between populations resident in the Gulf but not enough to make a single homogenous population. A distinct group of cod spawned in the autumn in inlets of the outer coast of Nova Scotia. Only 2 percent of all the cod recaptured had crossed the Laurentian or Fundian channels, the cod population of the area under review being distinct from those of grounds off Newfoundland or New England. All these findings from tagging accord with those from an analysis of vertebral counts. Movements of cod were related to submarine physiography, deep channels acting as barriers. Within the area as a whole, movement increased from west to east, as does the seasonal range of water temperatures. Larger cod moved, on the average, more than smaller. Average size of cod increased with depth. Cod of the same size from deeper water moved more than those from shallower water. Movements have been related to spawning in some instances. No large-scale, well-defined movements related to feeding were shown, although concentrations of food are believed to influence movements. Seasonal changes in local fisheries for cod were related to movements indicated by tagging."

COMMISSIONS:

Fifteenth Annual Report of the Atlantic States Marine Fisheries Commission (to the Congress of the United States and to the Governors and Legislators of the Fifteen Compacting States), 94 pp., printed. Atlantic States Marine Fisheries Commission, 22 West First St., Mount Vernon, New York, April 1957. This report seeks to condense the many activities of the Atlantic States Marine Fisheries Commission into a brief summary that will serve to some degree the varying purposes of the member state governments, their representatives on the Commission, the Congress of the United States, interested Federal and state officials, scientists and others interested in fishery management, and the general public. The Report on the State of the Commission describes the Commission's growth from 1941 to 1956; interstate and Federal-state relations; overfishing problems; uniform laws; fishery management; progress in the development of catch statistics, biological and technological research, fisheries exploration, and fishery education; and progress with respect to particular species. This section also discusses future technological, biological, and legal problems; changes in Commission organization; activities of the striped bass, gray sea trout (weakfish), blue crab, and special study committees; and the 1956 Commission recommendations to Federal agencies. Reports from the North Atlantic, Middle Atlantic, Chesapeake Bay, and South Atlantic Sections include discussions of each of their particular problems and projects.

FILLETING:

"Maskinfiletering av Torsk" (Machine Filleting of Cod), by F. Borg, article, Norsk Fryserinaering, vol. 8, no. 2, January 1956, pp. 1-4, illus., printed in Norwegian. Fr. Nansens Plass 4 Vaer. 221-223, Oslo, Norway.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

FISH LADDERS:

Hydraulics of Box Culverts with Fish-Ladder Baffles, by Roy H. Shoemaker, Jr., Reprint no. 53, pp. 196-209, illus., printed. Oregon State College, Engineering Experiment Station, Corvallis, Ore., 1956.

FISH MEAL:

"Changes in Fat Extractability and Protein Digestibility in Fish Meal During Storage," by H. J. Almquist, article, Journal of Agricultural and Food Chemistry, vol. 4, July 1956, pp. 638-639, printed. American Chemical Society, 1155 16th St., NW., Washington 6, D.C.

FISH OILS:

"Determination of Structure and Analysis of Highly Unsaturated and Saturated Acids of Fish Oils," by O. S. Privett, article, Annual Report of The Hormel Institute, 1955-56, pp. 59-61, printed. The Hormel Institute, Austin, Minn.

FISH PROCESSING AT SEA:

"Schiffbauliche Probleme der Fischverarbeitung auf See" (Shipbuilding Problems Concerning the Processing of Fish at Sea), by K. Oelschig, article, Schiffbautechnik, vol. 5, no. 7, July 1955, p. 212, printed in German. VEB Verlag Technik, Unter den Linden 12, Berlin, Germany.

FLORIDA:

Quarterly Report on Fisheries Research, March 1957, No. 57-11, 12 pp., processed. The Marine Laboratory, University of Miami, Coral Gables, Fla. A report to the Florida State Board of Conservation on fisheries research covering shrimp, spotted weakfish, tarpon, snook, gamefish, spearfishing, mullet, and sailfish. Despite the widespread use of sodium bisulfite in the shrimp industry, control of black spot continues to be a major research activity. Lower concentrations of sodium bisulfite, and use of ionol and other chemicals continue. Terramycin and dynactol were tested in connection with experiments to improve the freshness of shrimp landed. Little improvement in bacterial or other scores was shown using terramycin, but good preliminary results were evident from the dynactol tests.

FRANCE:

Bulletin Officiel d'Information du Conseil Superieur de la Peche (Official Information Bulletin of the High Council of Fisheries), No. 27, January-February-March 1957, 61 pp., illus., printed in French, 100 francs (29 U.S. cents). H. Siraudeau, 6 place de la Visitation, Angers - C./C. Paris 4012-03, France.

GROUNDFISH:

Groundfish: Fishing and Filleting--Information on the Domestic Industry, Production, Consumption, Foreign Trade, and Industries in Foreign Countries, 183 pp., processed. U.S. Tariff Commission, Washington 25, D.C., May 1957. Presents detailed factual information on groundfish fishing and filleting in the United States and in foreign countries. It supplies extensive information on United States groundfish fishing operations, including fishing areas, the sale of fish at dockside, employment and earnings of fishermen, financial experience of vessel owners, as well as summary data on the recent government loan program that is designed to assist the domestic fishing industry. With regard to filleting operations, this publication gives information on production, prices and stocks, employment and wage rates, and on the recent financial experience of filleting plants. It also includes information on the consumption of groundfish fillets and discusses the effect of the consumption of fish sticks upon the total consumption of groundfish fillets in all forms. It reviews the foreign trade of the United States in groundfish fillets and includes information on foreign sources, the volume of imports, and the species imported. It reviews recent developments in the groundfish fillet industries of the principal foreign supplying countries--Canada, Iceland, and Norway; and it discusses the comparative quality of imported and domestic fillets.

IMPORTS:

United States Imports of Merchandise for Consumption (Commodity by Country of Origin), Calendar Year 1956, Report No. FT 110, 193 pp., processed, $1. Bureau of the Census, U. S. Department of Commerce, Washington, D. C., May 1957. (For sale by the Superintendent of Documents, Washington 25, D. C.) The import statistics include government as well as non-government shipments of merchandise (including fish and shellfish and fishery byproducts) from foreign countries to the United States.

LAKE TROUT:

The Early Life History of the Lake Trout in Lake Superior, by Paul H. Eschmeyer, Miscellaneous Publication no. 10, 31 pp., illus., printed. Institute for Fisheries Research, Ann Arbor, Mich.

MAINE:

Fishways in Maine, by Laurence F. Decker, Pamphlet no. 5, 23 pp., illus., printed. Department of Inland Fisheries and Game, Information and Education Division, Augusta, Maine, 1956.

Shellfish and Marine Worm Laws, Report to 98th Legislature, Publication 98-3, 74 pp., printed. Legislative Research Committee, Augusta, Maine, 1957.

NORWAY:

Norges Fiskerier, 1954 (Fishery Statistics of Norway), Norges Offisielle Statistikk Series XI, no. 256, 106 pp., illus., printed in Norwegian with foreword, table of contents, and summary in English. Director of Fisheries of Norway, Bergen, Norway, 1957. A detailed statistical report on the fisheries of Norway with discussions of the number of fishermen, craft, processing plants, and gear; quantity and value of total landings; herring, sprat, cod, mackerel, tuna, dogfish, and capelin fisheries; fisheries in distant waters; and catch of small whales and sealing. Statistics are given on quantity, value, and average prices of all species of fish caught commercially. Some of the survey tables included in the preceding editions of this publication have been omitted in the present issue. For the most part these tables presented back-year statistics on the landings by counties. New tables have been added showing the landings with the various types of fishing gear by species or species groups, the vessels in some fisheries by length, and the landings in Møre and Romsdal and Finmark by months. Also contains a list of scientific and common names, in four different languages, of fish, crustaceans, mollusks, and other aquatic organisms in Norwegian waters; drawings of the principal species of fish, mollusks, and crustaceans; and drawings of the different types of fishing gear.

NUTRITION:

Essentials of an Adequate Diet (Facts for Nutrition Programs), Agriculture Information Bulletin No. 160, 21 pp., illus., printed, 15 cents. Agricultural Research Service, U.S. Department of Agriculture, Washington, D.C., November 1956. (For sale by the Superintendent of Documents, Government Printing Office, Washington 25, D.C.) This publication is designed as source material for nutritionists, extension workers, and others who are teaching the principles of good food selection. The food plan given here shows one way to choose foods wisely for good health by emphasizing foods that contribute a large share of the daily needs of certain key nutrients. The plan suggests a diet pattern that will provide for nutritional needs within the framework of food habits and food supplies of the United States. It also shows why the different foods and groups of foods (including fishery products) stressed in the daily food plan are important to a diet that fully meets recommended allowances and how the plan measures up in providing such a diet.

OREGON:

Special Interim Fisheries Committee Report, 1955-1957, 21 pp., printed. Legislative Assembly, Salem, Ore., 1957.

OYSTERS:

Recent Oyster Mortalities and a Method for Restoring the Fishery, by R. R. Logie, General Series Circular No. 28, 3 pp., illus., processed. Fisheries Research Board of Canada, Biological Station, St. Andrews, N.B., Canada, April 1957. Observations on oyster mortalities in the Maritime Provinces and method of rehabilitation.

Rehabilitation of Disease-Depleted Oyster Fisheries, by H. R. Found and R. R. Logie, General Series Circular No. 29, 2 pp., processed. Fisheries Research Board of Canada, Biological Station, St. Andrews, N.B., Canada, April 1957. Describes the epidemic disease of oysters in Prince Edward Island, New Brunswick, and Nova Scotia and the rehabilitation program.

PHILIPPINES:

The Philippine Journal of Fisheries, vol. 3, no. 2, July-December 1955, pp. 85-193, illus., printed. Department of Agriculture and Natural Resources, Manila, Philippines, 1956. Contains, among others, the following articles: "Availability of Calcium in Bagoong Alamang, Dried Alamang, Canned Bangos, Oyster Shell, and Balut," by Silvestre V. Bersamin, Olympia N. Gonzalez, and Jose I. Sulit; and "Commercial Trawling in the Philippines," by Porfirio R. Manacop.

PRESERVATION:

Canning and Freezing Oysters, Crab, Shrimp, and Fish, by Lena E. Sturges, Circular 151, 8 pp., printed, University of Florida, Agricultural Extension Service, Gainesville, Fla., 1956.

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--Charles Butler

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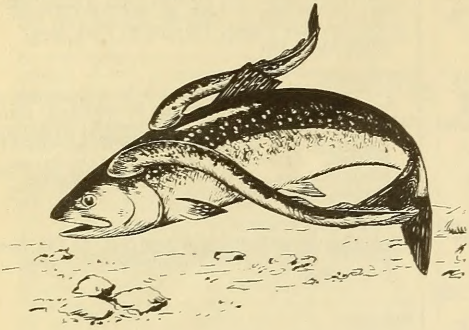
BIOLOGICAL NOTES ON THE SEA LAMPREY

The life cycle of the sea lamprey may be divided into two periods--stream life and lake life. Mature sea lampreys enter the streams tributary to the Great Lakes to spawn in late spring and early summer. This spawning migration may extend over as many as 12 weeks. Temperature is a major factor, and heavy runs do not begin until the stream reaches 50° F.



SEA LAMPREY FEEDING ON A TROUT.

For successful nest building a bottom of coarse gravel and rubble in an area with a moderately strong current is required. Seizing stones with their sucker-like mouths, the sea lamprey build crescent-shaped nests. When the eggs are extruded by the female and fertilized by the male, they are carried by the current into the gravel of the nests where they develop and hatch in 10 to 12 days according to temperature conditions. A single female may deposit as many as 107,000 eggs; the average number is about 61,500.

The sea lamprey spawns only once, and having reached sexual maturity dies following the spawning season.

When the hatched larvae emerge from the nest they drift downstream until they reach mud and silt flats where each establishes itself in its individual burrow. The food, sucked in from the water passing the mouth of the burrow, consists largely of microscopic organisms that live in the surface film of the stream bottom. During the stream life the young lamprey are completely harmless.

The length of the larvae life is about four years. During the final season in the stream the larvae begin to transform into the adult parasitic stage. Once the transformation is completed they emerge from the mud flats and drift lakeward. Although some of the young lamprey leave the streams in the late fall and a few at various times during the winter, the major downstream movement occurs at the time of the spring breakup. This migration always occurs at a time of rising water levels and when the young lamprey reach the lake they are ready to begin their parasitic existence.

Details on the life of the sea lamprey in the lake are scanty. Research indicates that the average time in the lake is about $1\frac{1}{2}$ years. There is some evidence that the young lamprey migrate first to deep water where they attack lake trout, cisco and other deep-water species. As the lamprey grow larger, they move shoreward and in the fall are to be found in relatively shallow water. It is at this time that attacks on whitefish, suckers and other fish in the shallow water reach their maximum.

The sea lamprey feeds on the blood and body juices of fish, attaching itself to its victim by means of its sucker-like mouth and rasping a hole in the body with its sharp teeth.

Towards the end of the winter and in early spring the lamprey begin to congregate in estuaries off the mouths of streams. At this period tremendous internal changes occur. The sex glands expand enormously, the digestive tract and other organs shrink, and the lamprey becomes incapable of feeding. The process of deterioration extends even to the musculature and skin, and the lamprey is subject to extensive attacks by fungus.

--Trade News,
Department of Fisheries of Canada, May 1957